

Vol. I
TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 332

**THE WILLIAMS MANUFACTURING COMPANY,
PETITIONER,**

vs.

UNITED SHOE MACHINERY CORPORATION

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SIXTH CIRCUIT**

PETITION FOR CERTIORARI FILED AUGUST 1, 1941.

CERTIORARI GRANTED OCTOBER 20, 1941.

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The District Court of the United States
Southern District of Ohio, Western Division.

In Equity No. 1016.

UNITED SHOE MACHINERY CORPORATION,
Plaintiff,

v.

THE WILLIAMS MANUFACTURING COMPANY,
Defendant.

BILL OF COMPLAINT
(Filed April 19, 1937.)

Plaintiff for its bill of complaint says that it is informed and believes, and therefore avers, as stated in paragraphs 1 to 10 hereof, inclusive, as follows:

(1) Plaintiff, United Shoe Machinery Corporation, is a corporation duly organized and existing under the laws of the State of New Jersey, and an inhabitant of the State of New Jersey, having a principal place of business at Boston, Massachusetts. Defendant, The Williams Manufacturing Company, is a corporation duly organized and existing under the laws of the State of Ohio, and an inhabitant of the State of Ohio, and the Southern District of Ohio, Western Division, having its principal place of business in Portsmouth, Ohio, where it has committed the acts of infringement hereinafter set forth.

(2) This is a suit arising under the Patent Laws of the United States.

(3) Ronald F. McFeely, a citizen of the United States, then residing at Beverly, Massachusetts, being prior to August 16, 1916, the original and first inventor of certain new and useful improvements in lasting machines, lawfully filed on said day an application for United States patent therefor, and all his rights in said invention and application, and any patent which might issue thereon, having been assigned by mesne assignments in writing, duly recorded in the United States Patent Office, to the plaintiff, United Shoe Machinery Corporation, and the Statutes and Rules of the Patent Office having been fully complied with in all respects, United States Patent No. 1,558,737, was lawfully granted and issued to the plaintiff, pursuant to said applica-

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tion, on October 27, 1925; and the plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that same may be taken as part of this bill. Said invention of said McFeely was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

(4) Charles H. Hoyt, a citizen of the United States, then residing at Beverly, Massachusetts, being prior to January 28, 1920, the original and first inventor of certain new and useful improvements in fastening-inserting machines, lawfully filed on said day an application for United States Patent therefor, and having assigned by an assignment in writing, duly recorded in the United States Patent Office, all his rights in said invention and application, and any patent which might issue thereon, to the plaintiff, United Shoe Machinery Corporation, and the Statutes and Rules of the Patent Office having been fully complied with in all respects, United States patent No. 1,508,394, was lawfully granted and issued to the plaintiff, pursuant to said application, on September 16, 1924; and plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that same may be taken as part of this bill. Said invention of said Hoyt was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

(5) Charles F. Pym, a subject of the King of England, then residing at Detroit, Michigan, being prior to December 13, 1915, the original and first inventor of certain new and useful improvements in lasting

Bill of Complaint.

machines, lawfully filed on said day an application for United States patent therefor, and all his rights in said invention and application, and any patent which might issue thereon, having been assigned by mesne assignments in writing, duly recorded in the United States Patent Office, to the plaintiff, United Shoe Machinery Corporation, and the Statutes and Rules of the Patent Office having been fully complied with in all respects, United States Patent No. 1,368,968, was lawfully granted and issued to the plaintiff, pursuant to said application, on February 15, 1921; and the plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that the same may be taken as part of this bill. Said invention of said Pym was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

(6) The inventions patented by said patents are of great utility and of great value to the plaintiff, and have been put into extensive use.

(7) Since January 1, 1934, and prior to the filing of this bill of complaint, the defendant, The Williams Manufacturing Company, within said Southern District of Ohio, Western Division, has infringed plaintiff's exclusive rights under said McFeely patent No. 1,558,737, said Hoyt patent No. 1,508,394, and said Pym patent No. 1,368,968, by using, unlawfully and without license, lasting machines embodying the inventions patented in said McFeely patent, said Hoyt patent, and said Pym patent.

(8) Plaintiff has heretofore notified the defendant of its infringement of each of said patents, and defendant has continued its infringement after such notice.

(9) Defendant's infringing machines herein complained of were manufactured in Germany by Maschin-fabrik Moenus A. G., Frankfort A. M., Germany, by which concern they were supplied to defendant. Said concern also sent other such machines into the United States, but when notified of the infringement of plaintiff's said patents by such machines, said concern agreed to,

4

Bill of Complaint.

and did, withdraw all such other infringing machines from the United States. Said concern likewise offered to take back the defendant's said infringing machines, and requested defendant to return these machines to Germany, because of the infringement of plaintiff's patents by said machines, but defendant refused to return the machines, and persists in the use thereof.

(10) Although well aware of the plaintiff's rights under the said patents, defendant has carried on and is continuing its infringement in violation of plaintiff's rights as secured by said patents, whereby plaintiff has been and is being greatly and irreparably damaged, and whereby defendant has obtained and is obtaining profits which in equity belong to plaintiff, the amount of which damages and profits plaintiff cannot ascertain except by an accounting.

• WHEREFORE PLAINTIFF PRAYS:

(a) For a perpetual injunction restraining the defendant, its clerks, agents, servants and workmen, from directly or indirectly infringing said patents or any of them, and for a preliminary injunction to the like effect pending this suit.

(b) That plaintiff recover the profits, savings and advantages realized by the defendant, and the damages suffered by the plaintiff by reason of said infringement, and for an accounting of such profits and damages, and that any damages found be trebled because of the wilful persistence of the defendant in said infringement, and for plaintiff's costs.

(c) For such other and further relief as equity may require.

UNITED SHOE MACHIN-
ERY CORPORATION

By Sidney W. Winslow, Jr.,
Its President.

Bennett R. Knight,
Solicitor for Plaintiff.

Fish, Richardson & Neave,
Harrison F. Lyman,
Charles E. Hammett, Jr.,
84 State Street, Boston, Mass.,
Of Counsel for Plaintiff.

(Duly verified)

**MOTION OF DEFENDANT TO STRIKE PARAGRAPH
(9) OF BILL OF COMPLAINT**

(Filed May 6, 1937.)

Now comes the defendant in the above entitled cause, by its attorneys of record, and moves the Court for an order striking out paragraph numbered (9) of the bill of complaint appearing on pages 4 and 5 thereof.

The ground of this motion is, that said specified parts of the bill of complaint are impertinent or scandalous, violative of Rule 25 and inserted with the evident intent or purpose alone of prejudicing the rights of the defendant before the Court.

Toulmin & Toulmin,
Attorneys for The Williams
Manufacturing Company.

H. A. Toulmin

H. A. Toulmin, Jr.

Solicitors and of Counsel.

The Court is of opinion the foregoing Motion is well taken and that it should be and it is sustained.

7/12/37.

Nevin, J.

MEMORANDUM

Equity Rule 21 reads as follows:

"The right to except to bills, answers, and other proceedings for scandal or impertinence shall not obtain, but the court may, upon motion or its own initiative, order any redundant, impertinent or scandalous matter stricken out, upon such terms as the court shall think fit."

The instant action is an ordinary one in Equity for alleged infringement of Letters Patent. The paragraph of the bill complained of sets up that the accused apparatus was manufactured by a German concern and that, when the plaintiff notified this concern of its claim of infringement, this German manufacturer offered to take back the machine. The German manufacturer is not a party to the action, and the inclusion of this paragraph in the bill of complaint amounts to pleading augmentative expression, opinions, and evidentiary matter.

Rule 25 expressly provides that a bill shall contain merely "a short and simple statement of the ultimate facts upon which the plaintiffs asks relief, omitting any mere statement of evidence." In these days of voluminous litigation, it behooves counsel as well as litigants to relieve the courts from the burden of lengthy and

Memorandum.

rhetorical recitals in a pleading by strictly complying with this Rule.

In Western Union Tel. Co. v. Louisville & N. R. Co., 250 F. 199, 201 (C.C.A.5), the bill was made up of statements of law, augmentative expressions, and legal conclusions, of which the court said "much, if not all, could properly be stricken out as redundant or impertinent matter" under Rule 21.

Under similar circumstances, we here invoke this rule to purge the pleadings from matter that can have no pertinency under a bill charging patent infringement and evidently only appear thereon in an endeavor to prejudice the rights of defendant before the Court.

It is, therefore, submitted that the motion of the defendant should prevail and the matter contained in paragraph (9) of the bill of complaint should be ordered stricken out.

Respectfully submitted,

Toulmin & Toulmin,
Attorneys for The Williams
Manufacturing Company.

H. A. Toulmin

H. A. Toulmin, Jr.

Solicitors and of Counsel.

ORDER

(Filed July 21, 1937.)

This cause coming on regularly to be heard upon the motion of the defendant to strike paragraph numbered (9) from the bill of complaint, and the same having been submitted in open court, counsel for both parties being present, argument had and briefs filed and the Court being fully advised in the premises, and it appearing to the Court that the motion of the defendant is well taken:

Order.

IT IS ORDERED, ADJUDGED AND DECREED as follows:

(1) That the motion of the defendant to strike paragraph numbered (9) of the bill of complaint be and the same hereby is sustained and allowed;

(2) That the plaintiff be and hereby is granted leave to file an amended bill of complaint within the period of ten (10) days from the date of the entry of this order, eliminating the matters and things set forth and alleged in said paragraph (9) of the original bill of complaint, in accordance with this order.

(3) That the time within which the defendant may file its answer or otherwise plead be and the same hereby is extended pending the filing by the plaintiff of its amended bill of complaint as directed herein.

Dated 20th day of July, 1937.

Nevin,
U. S. Judge.

Approved as to Form:

Bennett R. Knight,
Attorney for Plaintiff.

Toulmin & Toulmin,
Attorneys for Defendant.

AMENDED BILL OF COMPLAINT

(Filed July 14, 1937.)

Plaintiff for its bill of complaint says that it is informed and believes, and therefore avers, as stated in paragraphs 1 to 10 hereof, inclusive, as follows:

(1) Plaintiff, United Shoe Machinery Corporation, is a corporation duly organized and existing under the

Amended Bill of Complaint.

laws of the State of New Jersey, and an inhabitant of the State of New Jersey, having a principal place of business at Boston, Massachusetts. Defendant, The Williams Manufacturing Company, is a corporation duly organized and existing under the laws of the State of Ohio, and an inhabitant of the State of Ohio, and the Southern District of Ohio, Western Division, having its principal place of business in Portsmouth, Ohio, where it has committed the acts of infringement hereinafter set forth.

(2) This is a suit arising under the Patent Laws of the United States.

(3) Ronald F. McFeely, a citizen of the United States, then residing at Beverly, Massachusetts, being prior to August 16, 1916, the original and first inventor of certain new and useful improvements in lasting machines, lawfully filed on said day an application for United States patent therefor, and all his rights in said invention and application, and any patent which might issue thereon, having been assigned by mesne assignments in writing, duly recorded in the United States Patent Office, to the plaintiff, United Shoe Machinery Corporation, and the Statutes and Rules of the Patent Office having been fully complied with in all respects, United States Patent No. 1,558,737, was lawfully granted and issued to the plaintiff, pursuant to said application, on October 27, 1925; and the plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that same may be taken as part of this bill. Said invention of said McFeely was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

(4) Charles H. Hoyt, a citizen of the United States, then residing at Beverly, Massachusetts, being prior to January 28, 1920, the original and first inventor of certain new and useful improvements in fastening-inserting machines, lawfully filed on said day an application for United States Patent therefor, and having assigned by an assignment in writing, duly recorded in the United

Amended Bill of Complaint.

States Patent Office, all his rights in said invention and application, and any patent which might issue thereon, to the plaintiff, United Shoe Machinery Corporation, and the Statutes and Rules of the Patent Office having been fully complied with in all respects, United States patent No. 1,508,394, was lawfully granted and issued to the plaintiff, pursuant to said application, on September 16, 1924; and plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that same may be taken as part of this bill. Said invention of said Hoyt was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

(5) Charles F. Pym, a subject of the King of England, then residing at Detroit, Michigan, being prior to December 13, 1915, the original and first inventor of certain new and useful improvements in lasting machines, lawfully filed on said day an application for United States patent therefor, and all his rights in said invention and application, and any patent which might issue thereon, having been assigned by mesne assignments in writing, duly recorded in the United States Patent Office, to the plaintiff, United Shoe Machinery Corporation, and the Statutes and Rules of the Patent Office having been fully complied with in all respects, United States Patent No. 1,368,968, was lawfully granted and issued to the plaintiff, pursuant to said application, on February 15, 1921; and the plaintiff ever since has been, and now is, the sole owner of said patent; and plaintiff here makes profert of said patent and prays that the same may be taken as part of this bill. Said invention of said Pym was new, useful, and not known or used by others in this country before his invention thereof; not patented or described in any printed publication in this or any foreign country before his invention thereof, or more than two years prior to his said application for patent therefor; not in public use or on sale in this country for more than two years prior to said application; not patented in any

Amended Bill of Complaint.

foreign country by him or his legal representatives on an application filed more than twelve months prior to said application for United States patent; and not abandoned.

(6) The inventions patented by said patents are of great utility and of great value to the plaintiff, and have been put into extensive use.

(7) Since January 1, 1934, and prior to the filing of this bill of complaint, the defendant, The Williams Manufacturing Company, within said Southern District of Ohio, Western Division, has infringed plaintiff's exclusive rights under said McFeely patent No. 1,558,737, said Hoyt patent No. 1,508,394, and said Pym patent No. 1,368,968, by using, unlawfully and without license, lasting machines embodying the inventions patented in said McFeely patent, said Hoyt patent, and said Pym patent.

(8) Plaintiff has heretofore notified the defendant of its infringement of each of said patents, and defendant has continued its infringement after such notice.

(9) The public has acquiesced in the validity of said Letters Patent to McFeely No. 1,558,737, to Hoyt No. 1,508,394 and to Pym No. 1,368,968.

(10) Although well aware of the plaintiff's rights under said patents, defendant has carried on and is continuing its infringement in violation of plaintiff's rights as secured by said patents, whereby plaintiff has been and is being greatly and irreparably damaged, and whereby defendant has obtained and is obtaining profits which in equity belong to plaintiff, the amount of which damages and profits plaintiff cannot ascertain except by an accounting.

WHEREFORE PLAINTIFF PRAYS:

(a) For a perpetual injunction restraining the defendant, its clerks, agents, servants and workmen, from directly or indirectly infringing said patents or any of them, and for a preliminary injunction to the like effect pending this suit.

(b) That plaintiff recover the profits, savings and advantages realized by the defendant, and the damages suffered by the plaintiff by reason of said infringement, and for an accounting of such profits and damages, and that any damages found be trebled because of the wilful persistence of the defendant in said infringement, and for plaintiff's costs.

Amended Bill of Complaint.

(c) For such other and further relief as equity may require.

UNITED SHOE MACHIN-
ERY CORPORATION

By Sidney W. Winslow, Jr.,
Its President.

Bennett R. Knight,
Solicitor for Plaintiff.

Harrison F. Lyman,
Charles E. Hammett, Jr.,
84 State Street, Boston, Mass.,
Of Counsel for Plaintiff.

(Duly verified)

**MOTION OF DEFENDANT FOR FURTHER
PARTICULARS**

(Filed July 24, 1937.)

Now comes the defendant by its attorneys of record, and, under the provisions of Equity Rule 20, moves the Court for an order directing the plaintiff to furnish and file further and better particulars of the matters stated in the bill of complaint as follows:

As to each of the three patents in suit:

(1) Specify which claim or claims are alleged to be infringed.

(2) The chronological order of the alleged dates of invention of each of the patents in suit, including the dates of conception, first drawings, and reduction to practice, that will be relied upon by the plaintiff.

(3) A statement setting forth precisely wherein there are found in the alleged infringing machine the features

Motion of Defendant for Further Particulars.

claimed by the plaintiff as new and patentable, as to each claim of the patents in suit.

The defendant shows to the Court that it is unable to fully and specifically answer the bill of complaint herein, until or unless it is advised in the matters called for by such further statement of particulars, and further moves that the time for filing its answer herein be extended to a period of twenty (20) days after the filing of said statement by the plaintiff.

Toulmin & Toulmin,
Attorneys for Defendant.

H. A. Toulmin

H. A. Toulmin, Jr.

Solicitors and of Counsel.

Sustained by consent in open court.

Sustained by date to be filed _____.

**DECISION ON MOTION FOR FURTHER
PARTICULARS**

(Filed October 22, 1937.)

NEVIN, District Judge:

This cause is now before the court on a motion filed by the defendant on July 24, 1937, wherein it asks the court for an order directing the plaintiff to furnish and file further particulars in the respects set forth in the motion. The motion contains three separate paragraphs with respect to the particulars desired by defendant.

The motion was presented to the court orally. At that time the motion as to paragraphs 1 and 2 was sustained. As to paragraph 1, the motion was sustained with the consent of counsel representing both parties. As to paragraph 2, the motion was sustained after it was agreed that the dates of the respective parties should be filed simultaneously.

Decision on Motion for Further Particulars.

This leaves then for the consideration of the court only so much of the motion as is found in paragraph 3 thereof.

Upon consideration of the pleadings, the arguments and briefs of counsel, the court is of the opinion that the motion, insofar as paragraph 3 thereof is concerned, is not well taken and that it should be and it is overruled.

An order may be drawn accordingly.

Nevin, J.

APPEARANCES:

For Plaintiff: Bennett R. Knight, Cincinnati, Ohio;
Fish, Richardson & Neave, Boston, Mass.

For Defendant: Toulmin & Toulmin, Dayton, Ohio.

ORDER ON DEFENDANT'S MOTION FOR FURTHER PARTICULARS

(Filed November 11, 1937.)

This cause having come on to be heard upon defendant's motion for particulars, filed July 24, 1937, and the matter having been argued and briefs submitted on behalf of both parties, now, upon consideration thereof, it is ORDERED as follows:

1. As to Paragraph 1, defendant's motion is sustained. The defendant shall have thirty (30) days within which to answer after the specification of claims by the plaintiff is filed.

2. As to Paragraph 2, defendant's motion is sustained. It is ordered that the plaintiff file its statement of dates of invention, under seal, with the Clerk of this Court, within fifteen (15) days from the date of entry of this order. It is further ordered that the defendant file, with its answer, a statement setting forth, as to each instance of prior knowledge, invention or use set up in defendant's answer or to be relied upon by defendant at the trial, the same information which is requested by

Order on Defendant's Motion for Further Particulars.

Paragraph 2 of defendant's present motion concerning the patents in suit, said statement of defendant to be also under seal. The Clerk of this Court is then authorized to open simultaneously both of said statements under seal and to file them with the papers in this cause.

3. Paragraph 3 of defendant's motion is hereby overruled, to which the defendant excepts, which exception is granted.

Nevin,
United States District Judge.

Approved as to form:

C. E. Hammett, Jr.,
Of Counsel for Plaintiff.

H. A. Toulmin, Jr.,
Of Counsel for Defendant.

PLAINTIFF'S STATEMENT OF PARTICULARS

(Filed November 20, 1937.)

Now comes the plaintiff and, pursuant to Paragraph 1 of an order entered November 11, 1937 on Defendant's Motion for Particulars, specifies the claims alleged to be infringed, as follows:

Pym Patent No. 1,368,968—Claim 168.

Hoyt Patent No. 1,508,394—Claims 19, 20, 21 and 22.

McFeely Patent No. 1,558,737—Claims 6, 21-28 inclusive, 38-42 inclusive, 47-55 inclusive, 68-75 inclusive, 84, 85, 91, 92, 93 and 110.

Fish, Richardson & Neave,
Of Counsel for Plaintiff.

**PLAINTIFF'S STATEMENT OF DATES
OF INVENTION**

(Filed November 22, 1937.)

Now comes the plaintiff and, pursuant to Paragraph 2 of an order entered November 11, 1937 on Defendant's Motion for Particulars, answers Item 2 of said motion as follows:

The chronological order of dates of invention of the patents in suit is:

PYM PATENT NO. 1,368,968

Conception, drawings and reduction to practice early in the year 1914.

McFEELY PATENT NO. 1,558,737

Claims 6, 84 and 85—Conception, drawings and reduction to practice in July, 1914.

Claims 21-28 inclusive, 91 and 92—Conception, drawings and reduction to practice in June, 1914.

Claims 38-42 inclusive, 47-55 inclusive, 68-75 inclusive, 93 and 110—Conception, drawings and reduction to practice in August, 1915.

HOYT PATENT NO. 1,508,394

Conception, drawings and reduction to practice in January, 1917.

Fish, Richardson & Neave,
Of Counsel for Plaintiff.

(Envelope opened 12/16/37.)

**STATEMENT OF DATES OF PRIOR USES TO BE
RELIED UPON BY DEFENDANT**

(Filed December 16, 1937.)

The dates relied upon are the filing dates of the following patents, which are identified with each prior use by the letter of the paragraph referring to the prior use in paragraph 13 of the answer:

Statement of Dates of Prior Uses to Be Relied
Upon by Defendant.

(a)	935,065	1,135,945
	946,708	1,135,958
	974,202	1,171,383
	1,002,818	1,188,616
	Re. 13,292	1,188,617
	1,023,854	1,197,437
	1,030,519	1,197,439
	1,030,562	1,284,870
	1,030,847	Re. 14,576
	1,033,946	1,368,968
	Re. 13,505	(b) 601,933
	Re. 13,507	601,935
	1,066,375	(c) 1,245,117
	1,068,843	(d) 524,445
	Re. 13,718	524,446
	1,104,016	(e) 402,959
	1,124,958	(f) 1,168,011
	1,129,881	(g) 672,624
	1,129,882	(h) 588,569
	1,130,142	(i) 569,231
	1,132,630	(j) 596,323
	1,132,978	(k) 957,949

Respectfully submitted,

Toulmin & Toulmin,
Counsel for Defendant.

(Removed copy from envelope 12/20/37
B. R. Knight)

ANSWER and COUNTERCLAIM
(Filed December 16, 1937.)

TO THE HONORABLE JUDGES OF THE DISTRICT
COURT OF THE UNITED STATES, IN AND FOR
THE SOUTHERN DISTRICT OF OHIO, WESTERN
DIVISION:

Answer and Counterclaim:

The Williams Manufacturing Company, defendant, makes the following answer to the bill of complaint herein:

1. Defendant admits the corporate capacity and residence of the respective parties as averred in paragraph (1), but denies the remainder of paragraph (1).

2. Defendant admits the averment in paragraph (2) of the bill of complaint.

3. The defendant admits, on information and belief, that an application was filed by Ronald F. McFeely for Letters Patent and that such Letters Patent was issued as patent No. 1,558,737, but it is not advised as to the remainder of the averments of the paragraph, and therefore leaves the plaintiff to its proof thereof.

4. The defendant admits, on information and belief, that an application was filed by Charles H. Hoyt for Letters Patent and that such Letters Patent was issued as patent No. 1,508,394, but it is not advised as to the remainder of the averments of the paragraph, and therefore leaves the plaintiff to its proof thereof.

5. The defendant admits, on information and belief, that an application was filed by Charles F. Pym for Letters Patent and that such Letters Patent was issued as patent No. 1,368,968, but it is not advised as to the remainder of the averments of the paragraph, and therefore leaves the plaintiff to its proof thereof.

6. The defendant denies the allegations of paragraph (6) of the bill of complaint.

7. The defendant denies the allegations of paragraph (7) of the bill of complaint.

8. The defendant admits receiving recent notices of the alleged infringement of the patents in suit after it voluntarily disclosed its machines to the plaintiff and invited the plaintiff into its plant to examine the machines and operate them. The defendant made full and complete disclosure of these machines and has continued their operation in the same manner that it continued the operations of the machines prior to any notices from the plaintiff.

9. Answering paragraph (10) of the bill of complaint, the defendant denies the allegations thereof.

10. The defendant denies the necessity for any reason or ground for the relief as prayed for.

11. Further answering, defendant avers that the alleged invention described and claimed in the respective patents and attempted to be patented thereby, and every material and substantial part of said alleged inventions,

Answer and Counterclaim.

did not exhibit or embody any material or substantial variation or change from the devices or methods well known in the art relating to such devices and methods as existed prior to the dates of the alleged inventions or discoveries thereof by the said patentees respectively, and under any of the patents, publications and prior uses, etc., cited hereinafter, and did not, at such dates of alleged invention, involve the exercise of inventive faculty and did not constitute proper subject-matter for the grant of Letters Patent within the meaning and intent of the statutes of the United States relating to the grant of patents for inventions, and that said patents, and each of them, are invalid and void for lack of patentable novelty.

12. Further answering, defendant avers that the said patents in suit, and each of them are invalid and void in that the alleged inventions described and claimed in said patents, and every material and substantial part thereof, were anticipated and deprived of patentable novelty by the following patents and publications, were shown and described and/or patented and/or published prior to the alleged inventions or discoveries thereof by the said patentees respectively, or more than two years prior to the filing of the applications for said respective patents, in the following publications and patents, among others, to-wit:

As to the Ronald F. McFeely Patent No. 1,558,737:—

UNITED STATES PATENTS

Patent No.	Inventor	Date of Issue
244,714	Copeland, G. W. et al	July 19, 1881 (Filed June 21, 1881)
344,725	Cross, William C	June 29, 1886 (Filed May 7, 1886)
364,088	Chase, Frank	May 31, 1887 (Filed Apr. 5, 1887)
402,959	Millet, John W.	May 7, 1889 (Filed Dec. 27, 1888)
524,445	Lombard, Nathaniel	Aug. 14, 1894 (Filed Nov. 10, 1893)
524,446	Lombard, Nathaniel	Aug. 14, 1894 (Filed Nov. 15, 1893)
579,928	Keith, T. K., et al	Mar. 30, 1897 (Filed July 27, 1896)
588,569	Grandy, Edward F.	Aug. 24, 1897 (Filed July 29, 1896)

Answer and Counterclaim.

Patent No.	Inventor	Date of Issue
596,323	Eaton, Arthur W.	Dec. 28, 1897 (Filed Nov. 11, 1896)
601,933	Brock, Matthias	Apr. 5, 1898 (Filed May 24, 1897)
601,935	Brock, Matthias	Apr. 5, 1898 (Filed Feb. 14, 1896)
629,476	Streckler, Albert E.	July 25, 1899 (Filed Dec. 24, 1897)
672,624	King, Charles W.	Apr. 23, 1901 (Filed Oct. 25, 1894)
701,412	Snow, Stephen	June 3, 1902 (Filed June 25, 1900)
935,065	Stiggins, Edward A.	Sept. 28, 1909 (Filed May 25, 1906)
946,708	Snow, Stephen	Jan. 18, 1910 (Filed Sept. 5, 1905) Reissued
958,280	Plant, T. G.	May 17, 1910 (Filed Sept. 28, 1908) Reissued
1,002,818	Brock, Matthias	Sept. 12, 1911 (Filed Mar. 19, 1910)
RE 13,292	Snow, Stephen	Sept. 19, 1911 (Filed July 29, 1910)
1,023,854	Keyes, Eugene L.	Apr. 23, 1912 (Filed Apr. 30, 1908)
1,030,519	MacLeod, Albert A.	June 25, 1912 (Filed Nov. 8, 1911)
1,030,562	Brock, Matthias	June 25, 1912 (Filed July 25, 1910)
1,030,847	Norden, Carl S.	June 25, 1912 (Filed Mar. 18, 1911)
1,033,946	Russell, Arthur L.	July 30, 1912 (Filed Aug. 8, 1907)
RE 13,505	Glass, Perley R.	Jan. 7, 1913 (Filed Mar. 11, 1912)
RE 13,507	Plant, T. G.	Jan. 7, 1913 (Filed Apr. 18, 1912)
1,066,375	Brock Matthias	July 1, 1913 (Filed Aug. 14, 1909)
1,068,843	Bayard, Emery	July 29, 1913 (Filed Oct. 30, 1911)
1,110,171	Walther, Heinrich	Sept. 8, 1914 (Filed Dec. 10, 1906)
RE 13,718	Plant, T. G.	Apr. 21, 1914 (Filed Apr. 9, 1912)

Answer and Counterclaim.

Patent No.	Inventor	Date of Issue
1,104,016	Stiggins, Edward A.	July 21, 1914 (Filed Nov. 16, 1904)
1,129,881	McFeely, Ronald F.	Mar. 2, 1915 (Filed Aug. 14, 1909)
1,129,882	McFeely, Ronald F.	Mar. 2, 1915 (Filed Apr. 17, 1911)
1,130,142	Cavanagh, James	Mar. 2, 1915 (Filed Apr. 28, 1911)
1,132,630	Stiggins, Edward A.	Mar. 23, 1915 (Filed Apr. 22, 1911)
1,132,978	Russell, Arthur L.	Mar. 23, 1915 (Filed Feb. 29, 1912)
1,135,945	Brothers, Eli	Apr. 13, 1915 (Filed June 30, 1908)
1,135,958	McFeely, Ronald F.	April 15, 1915 (Filed May 28, 1910)
1,168,011	LaChappelle, E. I.	Jan. 11, 1916 (Filed May 23, 1913)
1,168,963	Perri, Angelo	Jan. 18, 1916 (Filed Aug. 26, 1915)
1,171,383	Baxter, William C.	Feb. 8, 1916 (Filed Feb. 24, 1913)
1,188,616	Brock, Matthias	June 27, 1916 (Filed June 29, 1912)
1,188,617	Brock, Matthias	June 27, 1916 Reissued (Filed July 9, 1915)
1,197,437	Brock, Matthias	Sept. 5, 1916 (Filed Oct. 28, 1912)
1,198,439	Brock, Matthias	Sept. 5, 1916 (Filed Feb. 2, 1916)
1,222,127	Perri, Angelo	Apr. 10, 1917 (Filed May 15, 1916)
1,245,117	Merrick, Frank W.	Oct. 30, 1917 (Filed Apr. 28, 1913)
1,284,870	Brock, Matthias	Nov. 12, 1918 (Filed June 1, 1915)
RE 14,576	Brock, Matthias	Dec. 24, 1918 (Filed May 6, 1918)
1,368,968	Pym, Charles F.	Feb. 15, 1921 (Filed Dec. 13, 1915)

Answer and Counterclaim.

BRITISH PATENTS

Patent No.	Inventor	Date of Issue
9,793	McFeely, Ronald F.	Aug. 5, 1909 (Filed May 5, 1908)
13,947	Boult, Alfred J.	1913 (Filed Dec. 13, 1912)

GERMAN PATENTS

Patent No.	Inventor	Date of Issue
90,388	Ferguson, George	Feb. 16, 1897 (Filed Oct. 16, 1894)
248,247	United Shoe Machinery Co.	June 24, 1912 (Filed May 19, 1908)
293,626	United Shoe Machinery Co.	Aug. 21, 1916 (Filed Jan. 19, 1915)

As to the Charles H. Hoyt Patent No. 1,508,394:

UNITED STATES PATENTS

Patent No.	Inventor	Date of Issue
244,714	Copeland, G. W. et al	July 19, 1881 (Filed June 21, 1881)
344,725	Cross, William C.	June 29, 1886 (Filed May 7, 1886)
364,088	Chase, Frank	May 31, 1887 (Filed April 5, 1887)
524,445	Lombard, Nathaniel	Aug. 14, 1894 (Filed Nov. 10, 1893)
524,446	Lombard, Nathaniel	Aug. 14, 1894 (Filed Nov. 15, 1893)
569,231	Ray, Charles O.	Oct. 13, 1896 (Filed Aug. 5, 1895)
579,928	Keith, T. K. et al	Mar. 30, 1897 (Filed July 17, 1896)
596,323	Eaton, Arthur W.	Dec. 28, 1897 (Filed Nov. 11, 1896)
601,933	Brock, Matthias	Apr. 5, 1898 (Filed May 24, 1897)
601,935	Brock, Matthias	Apr. 5, 1898 (Filed Feb. 14, 1896)

Answer and Counterclaim.

Patent No.	Inventor	Date of Issue
629,476	Stirckler, Albert E.	July 25, 1899 (Filed Dec. 24, 1897)
701,412	Snow, Stephen	June 3, 1902 (Filed June 25, 1900)
935,065	Stiggins, Edward A.	Sept. 28, 1909 (Filed May 25, 1906)
946,708	Snow, Stephen	Jan. 18, 1910 (Filed Sept. 5, 1905) Reissued
974,202	Stiggins, Edward A.	Nov. 1, 1910 (Filed Nov. 16, 1904)
1,002,818	Brock, Matthias	Sept. 12, 1911 (Filed Mar. 19, 1910)
1,030,519	MacLeod, Albert A.	June 25, 1912 (Filed Nov. 8, 1911)
RE 13,505	Glas, Perley R.	Jan. 7, 1913 (Filed Mar. 11, 1912)
RE 13,507	Plant, T. G.	Jan. 7, 1913 (Filed Apr. 18, 1912)
1,066,375	Brock, Matthias	July 1, 1913 (Filed Aug. 14, 1909)
1,129,881	McFeely, Ronald F.	Mar. 2, 1915 (Filed Aug. 14, 1909)
1,132,630	Stiggins, Edward A.	Mar. 23, 1915 (Filed Apr. 22, 1911)
1,168,963	Perri, Angelo	Jan. 18, 1916 (Filed Aug. 26, 1915)
1,188,616	Brock, Matthias	June 27, 1916 (Filed June 29, 1912) Reissued
1,188,617	Brock, Matthias	June 27, 1916 (Filed July 9, 1915)
1,197,439	Brock, Matthias	Sept. 5, 1916 (Filed Feb. 2, 1916)
1,222,127	Perri, Angelo	Apr. 10, 1917 (Filed May 15, 1916)
RE 14,576	Brock, Matthias	Dec. 24, 1918 (Filed May 16, 1918)
1,368,968	Pynn, Charles F.	Feb. 15, 1921 (Filed Dec. 13, 1915)
1,558,737	McFeely, Ronald F.	Oct. 27, 1925 (Filed Aug. 16, 1916)

Answer and Counterclaim.

BRITISH PATENTS

Patent No.	Inventor	Date of Issue
451	The British United	Jan. 6, 1916
	Shoe Mach. Co., Ltd. (Filed Jan. 11, 1915)	
9,793	McFeely, Ronald F.	Aug. 5, 1909
		-(Filed May 5, 1908)
13,947	Boult, Alfred J.	1913
		(Filed Dec. 13, 1912)

GERMAN PATENTS

Patent No.	Inventor	Date of Issue
90,388	Ferguson, George	Feb. 16, 1897
		(Filed Oct. 16, 1894)
325,624	Moenus Maschinenfabrik	Sept. 18, 1920
		(Filed May 5, 1918)
359,195	United Shoe Machinery Corp.	Sept. 22, 1922
		(Filed May 22, 1920)

As to the Charles F. Pym Patent No. 1,368,968:

UNITED STATES PATENTS

Patent No.	Inventor	Date of Issue
244,714	Copeland, G. W. et al	July 19, 1881
		(Filed June 21, 1881)
344,725	Cross, William C.	June 29, 1886
		(Filed May 7, 1886)
364,088	Chase, Frank	May 31, 1887
		(Filed Apr. 5, 1887)
385,557	Houghton, John Q. A.	July 3, 1888
		(Filed July 30, 1887)
524,445	Lombard, Nathaniel	Aug. 14, 1894
		(Filed Nov. 10, 1893)
524,446	Lombard, Nathaniel	Aug. 14, 1894
		(Filed Nov. 15, 1893)
579,928	Keith, T. K., et al	Mar. 30, 1897
		(Filed July 17, 1896)
596,323	Eaton, Arthur W.	Dec. 28, 1897
		(Filed Nov. 11, 1896)
601,933	Brock, Matthias	Apr. 5, 1898
		(Filed May 24, 1897)
601,935	Brock, Matthias	Apr. 5, 1898
		(Filed Feb. 14, 1896)
629,476	Streckler, Albert E.	July 25, 1899
		(Filed Dec. 24, 1897)

Answer and Counterclaim.

Patent No.	Inventor	Date of Issue
701,412	Snow, Stephen	June 3, 1902 (Filed June 25, 1900)
946,708	Snow, Stephen	Jan. 18, 1910 (Filed Sept. 5, 1905) Reissued
957,949	Glass, Perley R.	May 17, 1910 (Filed Dec. 30, 1905) Reissued
958,291	Plant, T. G.	May 17, 1910 (Filed Dec. 28, 1906) Reissued
1,002,818	Brock, Matthias	Sept. 12, 1911 (Filed Mar. 19, 1910)
RE 13,292	Snow, Stephen	Sept. 19, 1911 (Filed July 29, 1910)
1,030,519	MacLeod, Albert A.	June 25, 1912 (Filed Nov. 8, 1911)
1,030,847	Norden, Carl S.	June 25, 1912 (Filed Mar. 18, 1911)
RE 13,505	Glass, Perley R.	Jan. 7, 1913 (Filed Mar. 11, 1912)
RE 13,507	Plant, T. G.	Jan. 7, 1913 (Filed Apr. 18, 1912)
1,066,375	Brock, Matthias	July 1, 1913 (Filed Aug. 14, 1909)
RE 13,718	Plant, Thomas G.	Apr. 21, 1914 (Filed Apr. 9, 1912)
1,124,958	Russell, Arthur L.	Jan. 12, 1915 (Filed July 26, 1912)
1,129,881	McFeely, Ronald F.	Mar. 2, 1915 (Filed Aug. 14, 1909)
1,132,630	Stiggins, Edward A.	Mar. 23, 1915 (Filed Apr. 22, 1911)
1,135,945	Brothers, Eli	Apr. 13, 1915 (Filed June 30, 1908)
1,168,963	Perri, Angelo	Jan. 18, 1916 (Filed Aug. 26, 1915)
1,188,616	Brock, Matthias	June 27, 1916 (Filed June 29, 1912) Reissued
1,197,439	Brock, Matthias	Sept. 5, 1916 (Filed Feb. 2, 1916)
1,188,617	Brock, Matthias	June 27, 1916 (Filed July 9, 1915)
1,222,127	Perri, Angelo	Apr. 10, 1917 (Filed May 15, 1916)

Answer and Counterclaim.

1,245,117	Merrick, Frank W.	Oct. 30, 1917 (Filed Apr. 28, 1913)
RE 14,576	Brock, Matthias	Dec. 24, 1918 (Filed May 16, 1918)

BRITISH PATENTS

Patent No.	Inventor	Date of Issue
9,793	McFeely, Ronald F.	Aug. 5, 1909 (Filed May 5, 1908)
13,947	Boult, Alfred Julius	1913 (Filed Dec. 13, 1912)

GERMAN PATENTS

Patent No.	Inventor	Date of Issue
90,388	Ferguson, George	Feb. 16, 1897 (Filed Oct. 16, 1894)
124,641	Streckler, Albert E.	Nov. 4, 1901 (Filed Aug. 7, 1898)
293,626	United Shoe Machinery Company	Aug. 21, 1916 (Filed Jan. 19, 1915)

13. Further answering, defendant avers that the said patents in suit, and each of them, are invalid and void in that long prior to the alleged inventions of the said respective patentees, or more than two years prior to the filing of the applications for said respective patents in suit, the alleged inventions purported to be patented in the respective patents, and all material and substantial parts thereof, were invented and/or known or used and/or in public use and/or on sale in the United States by the following named persons and corporations at the following named places, to wit:

- (a) United Shoe Machinery Company, and the officers and executives thereof, and employees thereof, at Paterson, New Jersey, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (b) The Consolidated & McKay Lasting Machine Company, and the officers and executives thereof, and employees thereof, at Portland, Maine, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (c) Union Lock Stitch Company, and the officers and executives thereof, and employees thereof, at Boston, Massachusetts, and elsewhere, more than

Answer and Counterclaim.

two years prior to the date of application for said Letters Patent in suit.

- (d) The Automatic Lasting Machine and Manufacturing Company, and the officers and executives thereof, and employees thereof, at Portland, Maine, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (e) John W. Millet and Alfred Dolge, and others, at Dolgeville, New York and New York, New York, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (f) Euclid I. La Chapelle, and others, at Beverly, Massachusetts, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (g) The Puritan Lasting Machine Company, and the officers and executives thereof, and employees thereof, at Portland, Maine, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (h) Edward F. Grandy, and others, at Everett, Massachusetts, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (i) The Chase Lasting Machine Company, and the officers and executives thereof, and employees thereof, at Portland, Maine, and Boston, Massachusetts, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (j) The Seaver Process Lasting Company, and the officers and executives thereof, and employees thereof, at Boston, Massachusetts, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (k) Perley R. Glass and Thomas G. Plant, and others, at Quincy, Massachusetts, and Boston, Massachusetts, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.
- (l) John Q. A. Houghton, and others, at Baltimore, Maryland, and elsewhere, more than two years prior to the date of application for said Letters Patent in suit.

Answer and Counterclaim.

14. Further answering, defendant avers that the said patents in suit, and each of them, do not describe the alleged inventions thereof respectively, as required by law in such full, clear and exact terms as to enable any person skilled in the art, to which said inventions purport to appertain, to comprehend, make or use the same, and said patents do not point out and distinctly claim, as required by law, the improvement or improvements alleged by the plaintiff to be patented by said patents respectively; wherefore defendant avers that said patents, and each of them, are invalid and void.

15. Further answering, defendant avers that by reason of proceeding had in the United States Patent Office in and during the prosecution of the application for the patents in suit, and by reason of the restrictions and limitations imposed upon said patents, as a condition to the grants thereof, the patentees of said patents and the plaintiff herein are estopped from maintaining and asserting said patents in any such scope or effect as to cover the subject-matter purported to be patented thereby or as to cover or embrace any device or construction made, used or sold by defendant.

16. Further answering, defendant avers that the alleged inventions purported to be patented in the respective patents in suit, and each of them, are devoid of patentable novelty and/or patentable utility, and that said patents, and each of them, are therefore invalid and void.

17. Further answering, defendant avers that each of the patents in suit, respectively, purports to patent the juxtaposing, bringing together, or assembling of two or more devices or steps in methods which were separately shown or described and/or patented and/or published and/or known or used in this country prior to the alleged invention of, or more than two years before the filing of the application from which such patent issued, and that said separate devices or steps of methods were capable of accomplishing the desired result, and, when so juxtaposed, brought together, or assembled, each of said devices or method steps operated according to its old and well known method or mode of operation and performed its old functions and accomplished its old results, and that when said separate devices were juxtaposed, brought together, as assembled by the respective patentees in the said patents in suit, the devices and methods did not produce any new, useful and unobvious result; and the methods, the structure, mode of

Answer and Counterclaim.

operation of and the methods carried out by the separate devices and methods remained unchanged in the assembled or combined device or method; and that therefore each of the patents in suit and each claim of each of said patents is invalid and void.

18. Further answering, defendant avers that each of the patents in suit, and each of the claims of each of said patents, is invalid and void in that they purport to patent unpatentable aggregations of structures.

19. Further answering, defendant avers that each of the claims of each of the patents in suit is invalid and void in that each claim is functional and therefore unpatentable.

20. Further answering the bill of complaint, defendant avers that the patents in suit are invalid and void for the reason that, for the purpose of deceiving the public, the descriptions and specification as filed in the Patent Office for said patents were made to cover less than the whole truth relevant to the inventions, or were made to cover more than was relevant to the alleged inventions and more than was necessary to produce the desired effects.

21. Further answering the bill of complaint, defendant avers that it is not guilty of any act of infringement of any of the claims of any of the patents in suit.

22. Defendant avers that it has been diligent in ascertaining and setting forth herein the several facts alleged including the various instances of prior invention, prior knowledge, prior public use, and prior sale or offer for sale, prior publication and prior patenting of the alleged invention or inventions of the said patents in suit, and each of them, and defendant avers that it believes other facts and instances do exist. Wherefore, it prays leave to add to this answer by amendment or otherwise such other facts or instances when it has ascertained such facts or learned of such instances.

23. Defendants avers that the patents in suit are invalid because said patents in suit constitute an effort to extend the monopolies of expired patents on old combinations by improving or substituting one element thereof, while the construction and operation is otherwise unchanged; and these patents in suit are further invalid because they merely consist of old mechanisms from which certain parts have been removed and equivalent old mechanisms showing the prior art have been substituted in an effort to secure a new and patentable combination, all contrary to law.

Answer and Counterclaim.

24. Insofar as defenses pleaded herein are inconsistent, they are pleaded in the alternative under General Equity Rule 30.

25. Further answering, defendant avers that the bill of complaint is defective and insufficient and violates the Statutes of Limitations contained in R. S. 4921, in that it fails to allege that the asserted infringement of each patent occurred within six years prior to the filing of the bill of complaint and after issuance of the patent.

26. Defendant further avers that it is advised and believes that large numbers of the machines of the type which it employs, which it purchased from Germany, have been sold and put into use in the United States and in Europe without any complaint or suit being filed by the plaintiff herein and, based upon such acquiescence by the plaintiff, defendant herein innocently proceeded to the purchase and use of said machines and has used them for some time last past without any complaint on the part of the plaintiff herein, until the defendant herein voluntarily made a full disclosure of said machines and their method of operation to the plaintiff herein, whereupon this plaintiff, upon seeing a typical machine of the defendant, brought this suit against the defendant.

WHEREFORE, defendant prays that the bill of complaint be dismissed at plaintiff's cost.

COUNTERCLAIM

1. Defendant hereby avers, by way of asking for affirmative relief, that the patents in suit under Nos. 1,558,737; 1,508,394 and 1,368,968 are null and void for the reasons set forth in the foregoing answer, and that said patents are not infringed by any machine being used by the defendant; and the defendant hereby seeks a declaratory judgment of this Court under the Declaratory Judgment Act of the United States of 1934 (United States Judicial Code, Sec. 274d, 28 U.S.C.A. 400) to the effect that the aforementioned patents are null and void and not infringed by the defendant.

WHEREFORE, the defendant prays for a decree of this Court that said patents in suit, Nos. 1,558,737; 1,508,394 and 1,368,968 are null and void and invalid and that the defendant does not infringe said patents.

The Williams Manufacturing Company.

H. A. Toulmin,

By F. L. Williams,

H. A. Toulmin, Jr.,

Secy. & Treas.

Counsel for Defendant.

(Duly verified).

**MOTION OF PLAINTIFF TO DISMISS
DEFENDANT'S COUNTERCLAIM**

(Filed December 27, 1937.)

Now comes the plaintiff, by its attorneys, and moves that defendant's counterclaim, contained on page 17 of defendant's answer, be dismissed and stricken from defendant's answer for the reason that the same is defective and insufficient, upon its face, both in law and in fact, to constitute a valid cause of action in equity or a counterclaim under the Federal Declaratory Judgment Act (28 U.S.C.A. 400) or Equity Rule 30.

C. E. Hammett, Jr.,
Fish, Richardson & Neave,
Counsel for Plaintiff.

Bennett R. Knight,
Solicitor for Plaintiff.

This is a patent infringement suit. Defendant's counterclaim in this case, which is contained on page 17 of defendant's answer, consists of a single sentence in which defendant avers that the patents in suit are void and not infringed by the defendant and asks for a declaratory judgment that these patents are void and not infringed. In a second sentence, defendant repeats its prayer for a decree that the patents are invalid and not infringed.

This counterclaim obviously fails to state any cause of action, either under the Declaratory Judgment Statute or under Equity Rule 30. In addition to the obvious defects of the counterclaim in matters of both form and substance, it is obvious that it does not raise any issues not raised by the bill of complaint and the answer thereto. Counterclaims of this nature were exhaustively considered in the case of *Hann v. Venetian Blind Corp.*, 15 Fed. Supp., 372, and the Court there concluded that a counterclaim like the present one was not sufficient and should be stricken from the answer.

This Court recently said, in the cases of *Petersime Incubator Co. v. Bundy Incubator Co. et al.*, 34 U. S. Pat. Q. 251 and *Peerless Bread Machinery Corporation v. Day Co.*, 34 U. S. Pat. Q. 254 that a bill for declaratory judgment should allege that the defendant's (here plaintiff's) representations of infringement were made in bad faith. No such allegation appears in defendant's counterclaim.

Further, the present counterclaim fails to allege infringement of the patents in suit by the defendant, an allegation said to be necessary in *Bettis v. Patterson*

**Motion of Plaintiff to Dismiss Defendant's
Counterclaim.**

Ballagh Corp., 16 Fed. Supp. 455 and in New Discoveries Inc. v. Wisconsin Alumni Research Foundation, 13 Fed. Supp. 596.

It is, therefore, respectfully submitted that defendant's counterclaim should be dismissed.

C. E. Hammett, Jr.,
Fish, Richardson & Neave,
Counsel for Plaintiff.

Solicitor for Plaintiff.

**PLAINTIFF'S MOTION FOR FURTHER AND
BETTER PARTICULARS.**

(Filed January 10, 1938).

Now comes the plaintiff, by its attorneys, and moves that the defendant be directed to file herein and to serve on plaintiff's solicitor within twenty (20) days, further and better particulars under and in accordance with Equity Rule 20, as follows:

1. What patents and publications, including those referred to in Paragraph 12 of the answer to the bill of complaint, will be relied upon by defendant at the trial of this cause to show the prior state of the art, to support the contention of anticipation or for any other purpose; and, of those so relied upon on which will defendant rely at such trial as showing anticipation of the patents in suit, or any of them, particularizing as to such latter patent or patents?

2. What instance or instances of alleged prior invention, knowledge, use and/or sale, as alleged in Paragraphs 11, 13, and 17 of the answer to the bill of complaint, and what additional instance or instances of alleged prior invention, knowledge, use and/or sale, will defendant attempt to prove at the trial of this cause,

Plaintiff's Motion for Further and Better Particulars.

and what particular instance or instances will be relied upon by the defendant to sustain its defense or defenses (particularizing as to the description of such defense) and, with respect to each such instance, state:

(a) Where and with whose knowledge the alleged prior invention, knowledge, use and/or sale occurred.

(b) The construction, purpose and operation of the thing or things alleged to have been so invented, known, used and/or sold.

(c) Whether there is in existence any thing, system or apparatus alleged to have been made, sold, used, known and/or invented prior to the inventions by the patentees of the patents in suit, or prior to the filing of the applications for the patents in suit, or more than two years prior to the dates of application for said patents in suit, or any records, documentary or otherwise, concerning the same; and if yea, describe the same specifically and state when and where the same may be inspected by plaintiff or its counsel or designee?

3. State wherein the patents in suit, or any of them, fail adequately to describe the respective inventions thereof, or to point out and distinctly claim the same as alleged in Paragraph 14 of the answer to the bill of complaint.

4. State wherein the descriptions and specifications as filed in the Patent Office for the patents in suit were made to cover less than, or more than, was relevant to the inventions thereof, as alleged in Paragraph 20 of the answer to the bill of complaint.

Fish, Richardson & Neave,
Attorneys for Plaintiff.

Bennett R. Knight,
Solicitor for Plaintiff.

This is a patent infringement suit, involving three patents. In its answer, defendant has set up numerous prior art patents and publications which are alleged to anticipate the patents in suit. Against one patent in suit, defendant has set up fifty-five alleged anticipating patents, against another patent in suit defendant has set up thirty-six alleged anticipating patents and against the third patent in suit, defendant has set up thirty-nine alleged anticipating patents. There is a certain amount of overlapping in these three lists of patents, but even so, sixty-six separate patents are alleged as

Plaintiff's Motion for Further and Better Particulars.

anticipations. The answer also sets up twelve alleged prior uses.

It is obvious that defendant can have no intention of relying on anything like this ridiculously large number of patents and prior uses and one purpose of the present motion is to require defendant to advise plaintiff which of these many patents and prior uses it will rely on at the trial. The expense of studying all these patents and investigating all these prior uses would be very large indeed and three-fourths of it would probably also be entirely useless, since defendant cannot have any serious intention of relying on anything like the number of prior patents, publications and prior uses set up in the answer. In the interest of simplification of the issues at the trial and to save the expense of a great deal of unnecessary work in preparation for the trial, plaintiff asks that defendant state how many of these alleged patents, publications and prior uses it will really rely on.

The answer further generally alleges that the patents in suit do not fully describe the inventions thereof, or point out and distinctly claim the same and that the descriptions and specifications filed in the Patent Office were made to cover less or more than was relevant to the invention. Nothing can be made of these vague allegations in their present state and plaintiff therefore asks that defendant be more specific as to these defenses.

Among the many authorities supporting the attached motion for particulars, mention may be made of *Lapeer Trailer Corp. v. Freuhauf Trailer Co.*, 24 Fed. (2d) 595; *Beacon Folding Mach. Co. v. Rotary Mach. Co.*, 23 Fed. (2d) 345; *A. B. Dick Co. v. Underwood Typewriter Co.*, 235 Fed. 300.

Plaintiff is unable intelligently to prepare for the trial of this case without the further particulars sought by the attached motion.

Fish, Richardson & Neave,
Attorneys for Plaintiff.

Bennett R. Knight,
Solicitor for Plaintiff.

(Duly verified)

PLAINTIFF'S FURTHER BILL OF PARTICULARS.

(Filed March 5, 1938).

Now comes the plaintiff and pursuant to agreement made between counsel in the presence of the Court on February 1, 1938 specifies the claims to be relied on at the trial, as follows:

Pym patent No. 1,368,968, Claim 168

Hoyt patent No. 1,508,394, Claims 19 and 21

McFeely patent No. 1,558,737, Claims 6, 23, 42, 68, 71, 85 and 91.

Fish, Richardson & Neave,
Counsel for Plaintiff.

Boston, Massachusetts,
March 3, 1938.

STATEMENT OF THE PRIOR ART RELIED UPON.

(Filed March 18, 1938).

Now comes the defendant, pursuant to the election of claims by the plaintiff on the 3rd day of March, 1938, and specifies that its principal prior art anticipation patents as to each patent in suit and the claims in issue that defendant expects to rely upon at this time are as follows. This statement is made prior to knowing the exact theory of plaintiff's case and this selection of prior art is necessarily tentative and subject to final revision at the trial if the necessities of the trial demand it.

Copeland et al No. 244,714: as to McFeely No. 1,558,737, claims 6 and 85.

Bayard No. 1,068,843: as to McFeely No. 1,558,737, claims 6 and 85.

McFeely No. 1,129,881: as to McFeely No. 1,558,737, all claims in issue; as to Pym No. 1,368,968, claim 168; as to Hoyt No. 1,508,394, claims 19 and 21.

Keyes Patent No. 1,023,854: as to McFeely No. 1,558,737, all claims in issue; as to Hoyt No. 1,508,394, claim 21.

Statement of Prior Art Relied Upon.

Eaton No. 596,323: as to McFeely No. 1,558,737, claims 6 and 85; as to Pym No. 1,368,968, claim 168.

Pym No. 1,368,968: as to McFeely No. 1,558,737, claims 6, 23, 42, 68, 71, 85 and 91; as to Hoyt No. 1,508,394, claims 19 and 21.

Snow No. 701,412: as to McFeely No. 1,558,737, claims 6, 23 and 85; as to Hoyt No. 1,508,394, claims 19 and 21; as to Pym No. 1,368,968, claim 168.

Brock No. 1,188,616: as to McFeely No. 1,558,737, all claims in issue; as to Pym No. 1,368,968, claim 168; as to Hoyt No. 1,508,394, claims 19 and 21.

Brock No. 1,002,818: as to McFeely No. 1,558,737, claim 23.

Plant No. 958,280: as to McFeely No. 1,558,737, claims 23, 42, 68, 71 and 91; as to Hoyt No. 1,508,394, claim 21.

Brock No. 601,935: as to McFeely No. 1,558,737, claims 6, 23, 68, 85, 91; as to Pym No. 1,368,968, claim 168; as to Hoyt No. 1,508,394, claims 19 and 21.

Merrick No. 1,245,117: as to McFeely No. 1,558,737, all claims in issue.

Brothers No. 1,135,945: as to McFeely No. 1,558,737, claim 42; as to Pym No. 1,368,968, claim 168.

McFeely No. 1,135,958: as to McFeely No. 1,558,737, claims 68, 71 and 91; as to Pym No. 1,368,968, claim 168; as to Hoyt No. 1,508,394, claims 19 and 21.

Stiggins No. 1,132,630: as to McFeely No. 1,558,737, claims 68, 71 and 91.

Lombard No. 524,445: as to McFeely No. 1,558,737, all claims in issue; as to Pym No. 1,368,968, claim 168.

McFeely No. 1,558,737: as to Hoyt No. 1,508,394, claims 19 and 21.

Cavanagh No. 1,130,142: as to McFeely No. 1,558,737, claims 68 and 71; as to Hoyt No. 1,508,394, claim 21.

MacLeod No. 1,030,519: as to Hoyt No. 1,508,394, claim 21.

Snow No. 946,708: as to Hoyt No. 1,508,394, claim 21.

Toulmin & Toulmin,
Counsel for Defendant.

**ENTRY WITHDRAWING PLAINTIFF'S MOTION
TO DISMISS COUNTERCLAIM OF THE DE-
FENDANT AND LEAVE TO FILE ANSWER OF
PLAINTIFF.**

(Filed July 12, 1938).

Upon application of the plaintiff and for good cause shown the said plaintiff is hereby authorized to withdraw its motion to dismiss the counterclaim of the defendant previously filed herein. Plaintiff is further authorized to file its answer to the defendant's counterclaim.

Nevin,
U. S. District Judge.

Bennett R. Knight,
For Plaintiff.

**PLAINTIFF'S ANSWER TO DEFENDANT'S
COUNTERCLAIM.**

(Filed July 12, 1938).

Now comes the plaintiff and, answering defendant's counterclaim, denies each and every averment of said counterclaim and further denies that the defendant is entitled to a declaratory judgment or decree or to any other relief whatever under said counterclaim.

Wherefore plaintiff prays that defendant's counterclaim be dismissed with costs to plaintiff.

UNITED SHOE MACHINERY CORPORATION,
By Fish, Richardson & Neave,
Its Attorneys.

Bennett R. Knight,
Solicitor for Plaintiff.

TRANSCRIPT OF TESTIMONY

(Filed August 14, 1939.)

MORNING SESSION,**MONDAY, JANUARY 16, 1939.**

Court met pursuant to adjournment. This cause coming on to be heard, and counsel being present as heretofore noted, the trial proceeded as follows:

MR. LYMAN: * * * Now, it is not an easy and simple case to understand; it is a complex machine, complex patent. We have done what we can to simplify it. We are only relying upon six claims out of the one hundred or more in McFeely, and two in the Hoyt patent. There are a good many other claims in this patent that are infringed, but Your Honor will remember that upon some interlocutory matter the court said: "This is too complicated; cut down your claims."

THE COURT: No, I said to anticipate the final result and to narrow the issues.

MR. LYMAN: It was a wise order, Your Honor. It does simplify the issues. It has been conformed to. I simply wanted to point out the fact we are simply relying on these claims.

THE COURT: I understand.

MR. LYMAN: We further simplified the issue by dropping out a patent to Pym which was originally relied upon, which showed a detail of adjustment mechanism that is used in defendant's machine, or certain features of it. But that patent expired pending this suit and we therefore did not want to burden the court with it and we dropped the suit as to that phase. * * *

MR. LYMAN: I want to put in the record what has been already stated as to the claims upon which we rely. The claims upon which we rely in the McFeely patent are claims 6, 23, 42, 68, 71 and 85. The claims in the Hoyt patent relied upon are claims 19 and 21. As I have already stated, we have notified the other side that we should not rely upon the Pym patent, which has expired, in the interests of cutting down the issues in this case. There is one other claim there, claim 91. Will you add that to the McFeely list? There are seven claims in the McFeely, 6, 23, 42, 68, 71, 85 and 91. * * *

Counsel for plaintiff thereupon offered in evidence printed copies of the two patents in suit, which are made part of this record, marked as follows:

Plaintiff's Exhibit No. 1, No. 1,558,737, to McFeely, October 27, 1925.

Plaintiff's Exhibit No. 2, No. 1,508,394, to Hoyt, September 16, 1924.

Testimony of Rene E. Duplessis.

MR. LYMAN: My brother and I have agreed, Your Honor, to the usual stipulation, that copies of patents may be received in evidence instead of formal certified copies. There is no question about the title here because these patents were issued to the plaintiff.

THE COURT: Any other stipulations to be entered into at this time?

MR. TOULMIN: No, Your Honor.

MR. LYMAN: We have agreed about the reporter.

MR. TOULMIN: We have agreed we will split the costs, each of us getting a copy and the original for Your Honor, and that is to follow the application of costs in due season.

THE COURT: All right. Call your first witness.

Thereupon,

Rene E. Duplessis,

called as a witness on behalf of the plaintiff,
having been first duly sworn, testified as follows:

Examined by Mr. Hammett:

Q1 Please state your name, age and residence. A. Rene E. Duplessis.

Q2 By whom are you employed, Mr. Duplessis? A. I am forty-nine years old; employed by the United Shoe Machinery Corporation in Beverly, in their experimental department.

Q3 I don't think we got your residence. A. 18 Corning Street, Beverly, Massachusetts.

Q4 What has been the nature of your work with the United, please? A. I have been employed at the United for thirty-five years, from 1907 to 1911 as a draftsman, and from 1911 up to the present time as a designer, shoe machinery, mostly on lasting machines.

Q5 Prior to the time that the United Shoe Model A machine came out what was the prevailing commercial practice in the lasting of heel seats of shoes? A. Prior to the time that the Model A heel seat lasting machine was put out by the United Shoe the prevailing method was the use of bed machines.

Q6 Will you please give the court a brief description of the bed machine and the sequence of operations involved? A. In the bed machine the operator takes a shoe in his left hand and he places it on a spindle that is at the right hand of the machine. And in the bed machine we have a toe head and a heel head, and in the lasting of the heel the shoe is placed on the heel spindle and set over the toe rest as he puts his right hand on the

Testimony of Rene E. Duplessis.

wheel that is fastened to the heel head. He then brings that heel head forward and locks it in place, guides the shoe with his hand from the edge rest, and with his hand on the right wheel he rotates the toe and wheel until he brings the rear end of the shoe in contact with the heel band. He then lets go of that hand wheel and takes hold of a lasting wiper handle with his right hand, and with his right foot on the treadle he raises the shoe up to a preliminary wiping level, then makes one wipe-over with the handle of the wipers. Then he puts his hand on the hand wheel handle again and sets the hand wheel up as tight as he can; so as to set the shoe into the heel band as tightly as possible by his hand. There is power on the left-hand side of the machine which closes the heel band. He engages the clip of the machine by pressing a lever up with his left knee. He then, with his right hand again on the handle and his left hand on the shoe, different parts of it, to guide the leather, if necessary, wipes the shoe over a successive number of times, as many as are necessary, until he is satisfied that the shoe is wiped as well as he can do it. When he is satisfied with that he takes a hand tacker, with his left hand, from a hook on the side of the machine. With his right hand he reaches over and picks up a maul, and goes through a process of driving individual tacks around that heel seat, holding the leather down as flat as he can. He then places the maul to one side and hooks up the tacker again. Then he does his toe lasting, whatever is necessary to last the toe. In McKay shoes the process is almost identical as with the heel seat, and in welt shoes they use different fastenings. Then he releases the shoe from the machine with his left knee; pressing the knee lever he takes the shoe out of the machine. If he is not satisfied with the looks of the heel seat he places it on a pin, with his left hand reaches over, picks up his lasting pincers, and tacks the heel wherever necessary to get it as fast as he possibly can. In the process of doing that he may upset the edge of the shoe somewhat; then he tries to iron it out with the handle of his maul or the handle of his pincers. And that is the process of the bed machine.

Q7 I hand you a set of nine photographs and ask you whether those illustrate the steps in the operation of the bed machine which you have just described. A. (After examining photographs): Yes, Your Honor, they do.

THE COURT: Have them marked.

Counsel for plaintiff thereupon offered in evidence the nine photographs illustrating the steps in the

Testimony of Rene E. Duplessis.

operation of the bed machine, as described by the witness, and the photographs are made part of this record, marked, respectively, **Plaintiff's Exhibits Nos. 3-A to 3-I**, inclusive.

Q8 How about the uniformity of the work turned out by these bed machines? How was the work from that point of view? A. The work from the bed machine was not uniform. The results depended a great deal upon the weight and the experience of the operator and whether he was doing his work in the morning or afternoon; getting tired in the afternoon, many times his work was much poorer than it was in the morning.

MR. LYMAN: What did his weight have to do with it?

A. The pressure that is placed upon the bottom of the shoe in the wiping operation depends upon the amount of pressure the operator puts on the foot treadle. Therefore, a heavy operator, with more weight, would add a great deal more pressure than a light operator, with little weight.

Q9 Is the operation of this machine physically exacting? Is it a hard job or not? A. It was very tiring to the operator.

Q10 In addition to the bed machines were any other methods of heel-seat lasting in use prior to the Model A? A. In addition to the bed machine heel seats were lasted on a hand method lasting machine and on stitch down staple lasting machines.

Q11 Will you give us, please, a brief description of these two machines, just the essentials? A. In the hand method lasting machine the operator gripped a shoe in both hands. He generally held the toe of his shoe in his right hand and the heel of his shoe in his left hand. He guided the shoe against a bunter, which gave him his edge line, and held it up against a shoe rest. Then he put his foot on the treadle and the machine would push wipers forward over the edge of the shoe and drive one tack at that point through a slot in the wiper. He would then repeat that operation around the heel seat for as many tacks as he wanted. Then he went through the pounding up process, the same as the bed machine.

In the stitch down staple lasting machine he placed the shoe on an anvil that was at a slight angle, and above the edge was a throat. He wiped the edge of the shoe down against the throat and clamped it to the anvil by a foot treadle with the toe of his right foot. With the heel of his right foot he pressed another treadle that

Testimony of Rene E. Duplessis.

started the mechanism to drive the staple, and he drove one staple on that spot, then removed his foot from the treadle and moved it over for the next staple. The speed depended upon the experience of the operator.

Q12 Were those two methods used to any appreciable extent in lasting heel seats? A. No. The hand lasting method was used mostly on children's work because it was hard to get small sizes into a bed machine; and it was used extensively on turned shoes. However, there were not a whole lot of turned shoes made; the percentage of turned shoes was small compared to the total amount of shoes made. And the same applied to stitch down. A stitch down staple laster was used merely for lasting welt shoes, which was a small percentage of the total amount of shoes.

Q13 Can you tell us the disadvantages inherent in the two machines you have just described? A. The disadvantages were it was a step-by-step process, they were very slow, and the results were not particularly good. The work depended too much on the operator to get good results.

Q14 The operator holds the shoe up to the tacker? A. He holds the shoe up and it depends upon how much he presses up for the wipe-over and to receive the tack.

MR. HAMMETT: That is all at this time.

MR. TOULMIN: Your Honor, I would like to defer my cross-examination until I see the machine he refers to.

THE COURT: Do we understand that these bed machines will be in operation?

MR. TOULMIN: That is one of the things he wants to show.

MR. LYMAN: That will be perfectly satisfactory to us, to defer your cross-examination.

MR. TOULMIN: I think I can do a shorter job.

THE COURT: The witness understands he will be back tomorrow.

Thereupon Mr. Duplessis retired from the witness stand and

Joseph Fausse,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Hammett:

Q1 Please state your name, age and residence. A. My name is Joseph Fausse. I think I will spell that for

Testimony of Joseph Fausse.

you, because it is a very confusing name—F-a-u-s-s-e. I live at Melrose, Massachusetts, 93 Hazeltine Avenue.

Q2 How old are you, Mr. Fausse? A. I am sixty-five years old, sir, today.

Q3 By whom are you employed? A. By the United Shoe Machinery Corporation.

Q4 And how long have you been employed by them? A. Thirty-four years the twelfth of this month.

Q5 What did you do before you went with the United Shoe? A. I was a shoemaker. I started in lasting shoes by hand, both on tack shoes, ply shoes and hand sewed shoes. That was my trade in the first place, and then I worked myself up to be a foreman and assistant superintendent of a shoe factory.

Q6 What positions have you held with the United Shoe? A. Well, when I first started in with the United Shoe it was in the Brockton office, Massachusetts. I went in there as a routine man and a quality man in the shoemaking end, and that meant that we had to take and go out to the different factories, install machines, teach operators, and see that the quality of the work met what the manufacturer wanted. That was our job, to do that, and many times we went in on calls that had nothing to do with machines, only the quality, to help the manufacturers out a little bit. They would get into a jam, or something, and they would ask the shoe people to go up and help them out a little bit.

Q7 And you have been in the operating department and in the research department? A. I am now employed in the research division in the Beverly factory.

Q8 Do you work with lasting machines? A. A good deal of the time.

Q9 What was the first commercial automatic heel seat lasting machine you ever heard of? A. The McFeely machine, which is called now the Model A machine, which was brought out by the United Shoe Machinery Corporation.

Q10 Were you familiar with that Model A machine when it came out? A. Yes. I was transferred from the Brockton office to the Boston office in the lasting and pulling department. That meant that we had to go all over the country to the different offices, visit the office and see how things were going, doing a little quality work, or one thing and another, and I was especially assigned to that job with McFeely in the Tom Plant factory, to see whether or not the United wanted to decide to split the operation from the bed machine,

Testimony of Joseph Fausse.

whether we should have two operations; one for toes and one for heels.

Q11 And the method of doing the heels was this Model A, if I understand you correctly? A. Yes.

MR. HAMMETT: Now, Your Honor, we have a Model A machine in the anteroom. All I want the witness to do is to identify it, so I can offer it in evidence. Perhaps I can ask him—

By Mr. Hammett:

Q12 Have you seen the machine in the exhibit room? A. Yes. You have a Model A, which is painted black. That is the old original McFeely Model A machine.

MR. HAMMETT: That is the only machine that is painted black, so perhaps that will be sufficient identification. We do intend to offer that machine in evidence; perhaps we might as well do it now.

MR. TOULMIN: If Your Honor please, I have not had a chance to inspect the machine to see if I shall make any objection to it.

THE COURT: Of course, you have that right.

MR. TOULMIN: If Your Honor will indulge me I won't delay the proceedings by stopping now.

The Model A machine of plaintiff, so offered in evidence, is made part of this record as **Plaintiff's Exhibit No. 4.**

By Mr. Hammett:

Q13 Do you remember approximately when the Model A machine went out commercially? A. Well, I think it was in the early part of 1916 or thereabouts. I could not say the exact date but I know it was in 1916.

Q14 What was your connection with this Model A machine? Did you install other machines besides the Plant machine? A. When I was sent over to the Plant factory with Ronald McFeely I was out there to study the machine, to find out how good the quality of the work was and to learn to operate the machine, which I did. And then when we started putting the machine out I was the man that was picked out to go to the different territories and introduce the machine and teach our own men in the branch offices to run the machine, and they in turn broke in the operators for the manufacturers.

Q15 Do you remember some places where you put that Model A? A. Yes, several of them. We had a machine in Dr. Posner's in Brooklyn, New York, on

Testimony of Joseph Fausse.

children's turned; we had a machine in Thomas's in Brooklyn on turned shoes; we had machines in Bridesburg, Pennsylvania, on turned shoes, children's; we also had a machine in Bedford Shoe in Carlisle, Pennsylvania—they were all children's shoes. And then we had machines on women's shoes, we had one in Minnehan's in Rochester, one in Krippendorf & Dittman in Cincinnati, and one in Utz & Dunn's. That was in Rochester, New York. And we also sent one of those machines, one of the twelve that was made, over to England in 1921.

Q16 The Plant factory you mentioned, where you first saw the machine, that was the Plant factory in Jamaica Plains; is that what you mean? A. Yes.

Q17 What was your experience as to the commercial operation of this Model A Machine? How did it work? A. From the start of the machine in Plant's, before we went out anywhere commercially, that is, to spread the machines around—we had to be sure that our machine would do the work satisfactorily—and all shoes that were presented to us in the Plant factory we did and did them satisfactorily; in fact, they were all better than anything we could get on the bed machine, more even work. Of course, we can do some shoes on the bed machine that are very nice, but they were not even. We would get one case that would be very nice and the next case would not be so good, because it was all left to the will of the operator to tighten up his shoe into his pad, and his pressure. So that when we started out and went out with the Model A machine from Plant's, every factory that we went into we did better work and more work than they ever expected that we could ever do.

Q18 Were you up at Rochester at Utz & Dunn's, with that machine up there? A. Yes, I was up there, and when they got the machine all set up and got one of our own men so that he could handle the machine then in turn we broke in an operator from Utz & Dunn's, and after we got the operator so that he would go along quite good, Mr. Metzger, of Utz & Dunn's, said to me, "When you go back to Boston I want you to do me a little personal favor. I want you to take and go to Sid Winslow and tell them" —

MR. TOULMIN: —I would like to object. I did not want to interrupt.

THE COURT: That is the thing to do if an objection is to be made.

MR. TOULMIN: I thought he was coming back. I must object to this. I think it is entirely immaterial to the issue here.

Testimony of Joseph Fausse.

THE COURT: Yes. I think the objection should be sustained.

Q19 I will ask the witness what production was obtained on the Model A machine.

MR. TOULMIN: We object. It doesn't make any difference. If the machine worked it produced something, and the amount is not in issue here, I think.

THE COURT: It may have a bearing. That remains to be seen. The witness may answer.

A. On stitch down work we used to do, when there was work to do—understand this; sometimes there was no work in the factory, but when we had plenty of work we could do from eighteen hundred to two thousand pair a day, and we did that day after day.

Q20 That was on children's shoes? A. Yes.

Q21 And on women's? A. On women's it was a little slower, due to the fact that the heavier the shoe the harder it is for the operator to take it from his rack, put them on his spindle, jack his shoe up, and put them back on the rack. That we find in all shoemaking—the larger the shoe, the slower the job is.

Q22 Take the bed machine, what would be an average production in lasting? A. Well, on turned shoes it is 350 to 400 pair a day on the bed machine for heels alone, and if they were doing toes and heels it would be around 240 to 250 pair, possibly. Sometimes it would be a little more or a little less, due to the quality of the work.

Q23 What would it be on the hand method? A. On the hand method on children's, on turns we used to get 500 or 600 pair a day.

Q24 Do you know approximately how many Model A machines were put out? A. There was twelve of them built.

MR. TOULMIN: If Your Honor please, I don't think the witness is qualified to know the records of this company as to the number of machines put out.

THE COURT: Even if he does know, ask him if he does.

Q25 Do you know how many Model A machines were put out? A. Twelve of them put out. I installed eleven of them in this country and one in England.

Q26 You said this Model A machine was developed by Ronald McFeely. Did you know Mr. McFeely personally? A. Yes. I knew him before he went to work on the heel seat laster. He was beyond a doubt one of the greatest inventors we ever had.

Testimony of Joseph Fausse.

MR. TOULMIN: I object, Your Honor.

THE COURT: Objection sustained.

Q27 Is Mr. McFeely living now? A. No; he died in 1917, I believe, 1917 or 1918, I am not sure. I should know; I went to his funeral.

MR. LYMAN: Wouldn't it be interesting to know the history of McFeely, Your Honor?

THE COURT: I don't know that it has any bearing.

MR. LYMAN: It doesn't directly, and we shouldn't press it if—

THE COURT: —It will just incumber the record. He stands on the same basis as any other inventor. I don't think we are interested in that.

MR. LYMAN: We do want on the record, Your Honor, the fact that McFeely was an inventor employed by the United Shoe Machinery Corporation.

THE COURT: That is all right. You may ask that question. The objection went to the witness—

MR. LYMAN: —Characterizing him as the greatest inventor.

THE COURT: Yes. You may ask this other question to show he was an inventor and employed by the United Shoe Machinery Corporation.

MR. HAMMETT: I think that is already on the record.

MR. LYMAN: I don't think it is.

By Mr. Hammett:

Q28 Who was Ronald S. McFeely? A. Ronald S. McFeely was an employee of the United Shoe Machinery Company as an inventor.

Q29 Do you know who Charles A. Hoyt was? A. Yes. Charlie Hoyt was his draftsman and designer.

Q30 Is Mr. Hoyt living? A. No.

Q31 Both Hoyt and McFeely are dead? A. Yes; he died after McFeely, possibly a couple of years.

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 How many adjustments and of what nature were there on the Model A machine, and what did those adjustments do? A. Well, you have the adjustment to raise your heel posts up for the proper height. You also have the adjustment to close in your wipers, large and small shoes. You also have an adjustment for your pads, and also have a knee motion. You have a pulling in motion. Then you have a holding in motion into the

Testimony of Joseph Fausse.

machine to hold the shoe. When I say "holding in" motion, it is to hold the shoe in the pad while the wipers are doing their wiping in. That is what I mean by "holding in" motion.

XQ2 Now each one of those adjustments was an adjustment made by the operator of the machine, I take it. A. Well, all of those adjustments were figured out, as near as could be figured out at the time, to give us a range of shoes, you understand. Then when we went into a shoe factory we adjusted the machine to cover as near as we could the range of shoes that they were making, and there might have been times when we were running down to a very small shoe, or we might have had a time when we were running up to a very large shoe, when we had to readjust, open or close, according to the sized shoe, now and then to get the tacking in the right place onto the heel seat.

XQ3 And such adjustments were manual adjustments that you would make here and there to get the machine into position to operate so as to last these particular shoes you wanted to last; is that correct? A. Yes. After the adjustments were made then we did not have to bother with it. We just simply locked the adjustment there, put in a shoe, stepped on the treadle, and the machine went.

XQ4 And those adjustments could be made by the operator if he was confronted with a different size of shoe for which the machine was not adjusted; is that true? A. Suppose, for instance, he was doing a woman's shoe and he was doing a size 9 and then he jumped onto a size 4; then there might have to be a little bit of adjustment for the tacking.

XQ5 Were the features of the adjustment on a shoe machine, a heel seat lasting machine such as Model A, the first adjustments that you ever saw on a heel lasting machine? A. The first automatic heel seat lasting machine that I ever saw.

XQ6 I am referring to the adjustments now. Did you ever see any heel seat lasting machine of any sort prior to Model A that had its parts adjusted to fit the particular shoe? A. On bed machines we have a pad that—you know that—when we set up the machine we adjust the closing in and out of the pad, and that is all we do to that machine. The operator on his tacking is controlled by the welt and the size of the shoe, by his hand levers.

Testimony of Joseph Fausse.

XQ7 In the bed lasting machine that you have just referred to is it not a fact that you have wipers in that machine? A. Yes.

XQ8 And don't you adjust the wipers in that machine in order to wipe the particular shoe that you are going to put in the machine? A. No. It is all done by hand with a hand lever that you close and open your pad.

XQ9 I am not talking about the actuation of the wipers, the movement of them. I am talking about the fact that those wipers have to be adjusted to the particular type of shoe that you are working on before you start a run of shoes on that machine. A. That depends on what bed machine you are talking about.

XQ10 Have you ever seen such a machine having such an adjustment of wipers? A. We had Number 6 and Number 7 machine, in which there was an adjustment.

XQ11 And in your Number 6 and 7 machines the wipers were adjusted in advance by moving the wipers bodily to do the wiping, weren't they? A. We got—

THE COURT: —Answer "Yes" or "No."

A. (After XQ11 was read): Yes.

XQ12 What other adjustments were there in the bed lasting machines besides this preliminary adjustment of the wipers? A. The toe post.

XQ13 What is the function of the toe post? A. The function of the toe post is that you take your last from the rack post and drop it into the spindle and then when you get your shoe into the spindle, if you find that your shoe is up a little too high to wipe, then the thing for the operator to do is to take his shoe out of the machine and screw the screw onto the machine to allow more room between the top of the shoe and the wipers.

XQ14 So in the bed laster you had a means of positioning the vertical position of the shoe, didn't you? A. Up and down, yes.

XQ15 Up and down. What other adjustment did you have in the bed laster besides the two we have just discussed? A. Of course, you have to have adjustment on the toe rest.

XQ16 All right. A. We had a toe rest adjustment.

XQ17 What other adjustment did you have in the bed laster? A. Well, we have adjustment to get the pitch of the last sidewise and this way (indicating).

XQ18 What other adjustment did you have besides that? A. Well, you got your adjustment on your

Testimony of Joseph Fausse.

toe and heel to rock your head according to the pitch of your last, and that is about all there is that I know of.

XQ19 Coming back to your Model A machine, which you say was the McFeely machine—Your Honor, I have not had a chance to inspect it yet but I am going to cross-examine up to that point, if I may. Coming back to your Model A machine, do I understand you to say that this machine had both wipers and tackers in it? A. Yes.

XQ20 Have you ever operated the McFeely machine before the tackers were applied to it, with just the wipers? A. I don't quite get just exactly what you mean.

XQ21 I will ask the question again to make it perfectly plain to you. What I want to know is, did you ever see a McFeely machine operated, of the Model A type, with its wipers in position but without the tackers being placed in position? A. No.

XQ22 Can you tell the court whether the wipers act differently when the tackers are in position as contrasted with the method of operation of those wipers in this Model A machine without the tackers? A. Well, not being an expert mechanic in the movement of the machine it would be a rather hard thing for me to answer so everybody could understand to their satisfaction.

XQ23 You go ahead and we will try to understand. A. In the first place, our wipers are made a certain thickness, say for instance a certain size. Then those wipers are connected with a connection that forces the wipers over, and then we adjust the tack blocks to follow the wipers on the end. And there is one place on the back side that you adjust and then after that is done you don't have to bother with your adjusting any more. If you have got a large shoe you just take the two ends of your machine and bring it up for small or for large shoes, and your tacker always goes with your wipers.

XQ24 Do those tackers on these machines change the operation of the wipers in any way? A. Well, if they do, I don't know. You will have to ask somebody that is more mechanical than I am.

XQ25 I thought you knew all about this machine and were an expert on it. A. I did not say I knew all about it.

XQ26 What has been your experience with this machine that you have been talking about? A. As a shoemaker and operator of the machine.

XQ27 As a shoemaker and operator of the machine you certainly know when a good wiping job is done, don't you? A. I think I do.

Testimony of Joseph Fausse.

XQ28 Do you know when a good tacking job is done?
A. Yes.

XQ29 Do you see in that machine as you operate it any change in the wiping because of the tacking being done? A. The wiping was just as good with your tacking as it was without.

MR. TOULMIN: That is all.

MR. HAMMETT: That is all.

THE COURT: Then at this point we will recess until two o'clock but this case will go over until ten tomorrow, and I understand we are to meet at Krippendorf-Dittman's.

MR. LYMAN: Yes, Your Honor.

THE COURT: That is the plant on Seventh Street off of Sycamore; is that it?

MR. HAMMETT: Yes, Your Honor.

MR. LYMAN: Mr. Fausse may be excused?

THE COURT: Yes.

MR. TOULMIN: Just a minute, Your Honor. I may want to examine that witness further after I look at the machine.

MR. LYMAN: That was Mr. Duplessis.

MR. TOULMIN: Yes, but I may have another question after I look at that machine.

MR. LYMAN: I don't want to keep him over a day. He is needed in Boston.

THE COURT: We will recess for five minutes. Then you can indicate if you want to ask any questions when we come back.

Thereupon a short recess was taken, after which Mr. Fausse resumed the stand and testified further, as follows:

By Mr. Toulmin:

XQ30 With reference to the Model A machine, of which I understand there is an example out in the ante-room, isn't it a fact that that machine has small springs adjacent the point of connection of the pressers at the outer ends of the heel band, to form a resilient connection? A. In the front part?

XQ31 In the front part. A. Yes.

XQ32 Does that machine have upwiping? A. Yes.

XQ33 What causes the upwiping, do you know? A. Cam motion.

XQ34 Do you know what part of the cam does that? A. The front part of the cam.

Testimony of Joseph Fausse.

XQ35 The front part of the cam, the very first cam contour? **A.** Yes. You will find there are two rods there; one adjusts the height of the shoe and the other adjusts the amount of upwipe that you want, in the machine.

MR. TOULMIN: That is what I want.

Thereupon an adjournment was taken in this cause until 10:00 o'clock in the morning of the following day, Tuesday, January 17, 1939.

MORNING SESSION,

TUESDAY, JANUARY 17, 1939.

Court met at 10:45 o'clock, counsel being present on behalf of both parties.

Thereupon,

Frank C. Biehl,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Hammett:

Q1 Please state your name and residence, Mr. Biehl. **A.** Frank C. Biehl; 4665 Howard Avenue, Cincinnati, Ohio.

Q2 How old are you, Mr. Biehl? **A.** Forty-seven years of age.

Q3 What is your present occupation? **A.** Foreman of the Krippendorf Shoe Company.

Q4 Where is the Krippendorf Company? **A.** On Seventh—Just Seventh Street is the front entrance.

Q5 In Cincinnati? **A.** In Cincinnati, yes, sir.

Q6 And you demonstrated to us this morning the lasting of shoes on the bed and Model D machines in your factory, didn't you. **A.** Yes, sir.

Q7 What has your experience been in the manufacture of shoes, Mr. Biehl? **A.** Well, I have been making shoes for the past thirty years, and I have been foreman for the last twenty-one years, and I have had a lot of experience in lasting shoes.

Q8 Going back to the two machines that you demonstrated this morning, I wish that you would briefly compare the heel seat lasting operation on the bed machine with the operation as performed on the United Shoe automatic Model D machine from the point of view of a shoemaker and an operator. **A.** Well, to begin

Testimony of Frank C. Biehl.

with, the Number 6 laster, that is the bed laster, and Number 7 the welts, we can do the same job on both machines. With the bed laster or the Model D you can get identically the same kind of work, but we can do about three shoes to one on the Model D against the bed lasting machine, which is the Number 7.

Q9 How about the uniformity of the work? A. Well, the uniformity of the work, on the Model D you are bound to get every one exact; they are bound to be the same as long as your machine is adjusted correct. You can't help from it. The shoes are all regular, the heel seats are flat, whereas on the bed machine there is a variation. It is against the operator's strength; he pulls up on the wheel and if he does not pull as hard on one shoe as he does on another, there is going to be just a little difference in the heel seats.

Q10 So there is a variation on the bed machine? A. Yes, there is a variation on the bed machine.

Q11 How about the necessary qualifications of an operator? Take an inexperienced man, which machine could he operate quickest? A. Well, I should say on Number 6 or 7 laster a man has got to have at least a year's experience, that is, to do toes and seats on a lasting machine; and I can take a man on the Model D and in about ten minutes' time I can go away and leave him and he knows just what has to be done—there is nothing but just to put the shoe on there, just keep it level with the machine.

Q12 What do you think of the Model D, as a shoemaker? A. I have been using the Model D—

MR. TOULMIN: I object, Your Honor.

THE COURT: The objection will be sustained as to the question. Of course it may be reframed to meet the situation. As it is I think the question is objectionable.

MR. TOULMIN: May I just make an observation for a moment? I am not objecting to this testimony, which would probably be rebuttal testimony. This being a court of equity I presume Your Honor will have the testimony taken in a way which will not be quite so formal, but it seems to me we are going far afield to go back and try the case in reverse.

THE COURT: I don't know that that is so, because there are some of the elements of plaintiff's case that I think this testimony meets.

MR. TOULMIN: I don't want to object. I want to make that observation. If it goes too far afield I will have to object, if they continue this.

MR. HAMMETT: You may cross-examine.

Testimony of Frank C. Biehl.

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 How many bed lasters have you in your plant?

A. Nine.

XQ2 They are in operation? A. Yes, sir.

XQ3 In daily operation? A. Yes, sir.

XQ4 Are they used for lasting heels and toes, one or both? A. Seven of them we use for lasting toes only and two for toes and seats.

XQ5 Do you have wipers in these bed lasters? A. Yes, sir.

XQ6 Are those wipers adjustable any way to the particular type of shoe that you are going to put in the bed laster? A. No. We set the wipers and that takes care of the general run of work unless we get an exceptionally large size shoe, and that hasn't happened in the last year or so that I know of. We have some special shoes, say for instance a man's shoe, that we have to adjust the heel pad or the wiper to get our tacks in place, but that hasn't happened in the last year.

XQ7 Do you agree with me, though, if there is any change in the shoe you can adjust the wipers? A. You can bring the wipers in or bring them out, yes; you can do that on the Number 7 laster.

XQ8 And do you have a set screw or something of that sort for adjusting the position of those wipers before you start to move them? Is it a screw or a screw bolt, or what is it? A. There is a bolt on top of the wiper that you have to loosen to bring your wiper in to it.

XQ9 In any one of these bed laster machines, any one of the nine you have, do you have any means for supporting the back of the heel band? A. Just what do you mean?

XQ10 Is there anything connected with the heel band? A. Yes, there is a chain back of the pad. There is a leather pad and there is a chain on there that regulates the width that we can pull it in or out. It is a flexible chain.

XQ11 Can you pull it forward and back slightly? A. No, I don't think you can. I don't know that now. I wouldn't say. I have never had the occasion to do that on the bed machine.

XQ12 You showed us a machine—the first bed laster you showed us this morning, you recall that, do you? A. Yes, sir.

XQ13 You remember there was one just behind you as you stood looking at the machine. I took you over

Testimony of Frank C. Biehl.

to it, or you joined me. It did have a connection at the back of the heel band, did it not? A. The one I was working on had the same thing. The only difference between them, it is just a screw on there that we can put tension on that springs the carriage back and forth, because when the man kicks that with his knee automatically the carriage goes back. That is what you saw back there, that screw.

XQ14 Can you adjust the outer end of the heel band, which I have here in my hands, inwardly or outwardly by any means? A. Yes, sir.

XQ15 Is that connection a stiff connection, or does it have a spring on it? A. I don't know that.

XQ16 When you turn the handle it pushes the end in or out, according to which way you push it? A. It works on a screw. When you turn it to the right you are closing it up.

XQ17 Do you know whether there is any give in that connection that you adjust on the ends of the heel bands? A. No, I do not.

XQ18 How long have you had these bed lasters in your plant? A. I can't answer that, how long they have been in this plant.

XQ19 How long to your knowledge have they been in this plant? You have been there a good many years. A. No, I have been there the last five years with Krippendorf. I was formerly with the Selby Shoe Company in Ironton, Ohio.

XQ20 Tell me about the Krippendorf. They have been there the five years you have been there? A. Yes, sir.

XQ21 Did the Selby Shoe Company have any bed lasters like that? A. Identically the same.

XQ22 How long were you with the Selby Company? A. Three and a half years.

XQ23 And did they have them all during that period of three and a half years? A. Yes, sir.

XQ24 How many did they have? A. Offhand I can't recall.

XQ25 Just approximately? A. Fifteen.

XQ26 Were they in use? A. Yes, sir.

XQ27 Daily use? A. Yes, sir.

XQ28 What type of shoe did you use the bed laster on? A. On the welt constructed. That is the only shoe that we use the bed laster on now for heels and toes; and the machine that we last the toes only on is the UCO machine.

Testimony of Frank C. Biehl.

MR. LYMAN: How do you spell UCO, please? A. U-C-O.

XQ29 Why don't you use the welt shoe and fabricate that on the Model D machine that we saw by the window?

A. There is a difference in construction of the welt shoe. It has a heavy upper on it. We can do that but there is a possibility of having damage. The damages are too great.

XQ30 It would not be a successful job, would it? A. No, sir, not on the heel seat. We can do it, yes, but there is a danger of damaging too many shoes on the Model D with the welt constructed shoe. I have had that experience.

XQ31 Let me ask you one more question in connection with this shoe that you are making on the Model D. Can that be made on the bed laster? A. On the heel seat? You mean last the heel seat?

XQ32 Yes. A. Yes, sir, it can.

MR. TOULMIN: That is all with the witness.

THE COURT: While this witness is on the stand I wonder if both sides would not want to get something in the record to have him describe the difference between the regular shoe and the welt.

MR. LYMAN: Yes.

THE COURT: The welt construction.

MR. LYMAN: Yes.

MR. TOULMIN: The witness might just answer that one question.

THE COURT: I would rather it be put by counsel.

REDIRECT-EXAMINATION

By Mr. Hammett:

RDQ1 Mr. Biehl, will you please explain the difference in construction between the shoes that you have been talking about, namely, the welt, and the McKay?

A. The welt shoe is constructed, it has a heavier insole and it is made with a channel on the insole where the shoe is sewed. The upper is stapled to the insole and it is sewed from this angle (indicating), it goes through the channel, where on the UCO method the shoe is sewed through the insole, comes through the insole onto the outsole.

RDQ2 That is not perhaps as clear—

THE COURT: —In one the stitches are covered by the channel of the sole. They both have a channel, the welt and the UCO shoe.

Testimony of Frank C. Bièhl.

A. Both have a channel but the UCO shoe is sewed in the channel where the welt shoe is sewed—if I had a shoe here we could demonstrate that.

RDQ3 Well, I think we have got a shoe. A. The insole is much lighter in the UCO method.

MR. TOULMIN: Might I suggest if we have a shoe made each way we might put them in evidence.

THE COURT: I am just looking a little bit ahead for the benefit of the Court of Appeals. I would just like to make the record complete.

MR. LYMAN: Do you, yourself, understand, Your Honor, what the welt shoe is?

THE COURT: Yes. I am just looking a little bit ahead. (After counsel for both parties confer privately with the court): All I wanted to do was to have the record full and complete. You can do it later. I thought this was a convenient witness.

MR. HAMMETT: That is all.

Thereupon Mr. Bièhl retired from the witness stand.

MR. HAMMETT: Call Mr. Hancock.

MR. TOULMIN: We have a witness we have not cross-examined yet.

MR. HAMMETT: The reason for calling this witness is he has done us the favor of coming from Stix-Wolf and we want to get him back as soon as possible.

Thereupon,

Edward B. Hancock,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Hammett:

Q1 Please give us your name and residence. A. Edward B. Hancock; 3551 Wabash Avenue.

Q2 What town? A. Cincinnati.

Q3 How old are you, Mr. Hancock? A. Forty-three.

Q4 What is your position, please? A. Superintendent for Stix & Wolf Company.

Q5 Where is Stix & Wolf Company? A. Park and Floral Avenue, Norwood.

Q6 Ohio? A. Ohio.

Q7 What has been your experience in the manufacture of shoes, Mr. Hancock? A. You mean my experience straight through?

Testimony of Edward B. Hancock.

Q8 Your background, yes, sir. A. Well, I started as a boy of thirteen and started out in the welt room, working in the welt room, and later became turn lasting foreman, welt lasting foreman, finishing room foreman—practically foreman of all the departments with the exception of the fitting room, and was made a superintendent for the Cincinnati Shoe Company and later a general superintendent for the Cincinnati Shoe Company, and then as superintendent of the L. V. Marks Company and am now with the Stix & Wolf Company as superintendent.

Q9 Over how long a period has this experience extended? A. From thirteen to forty-three—that is thirty years.

Q10 Will you please explain to us as a practical shoemaker the importance of the heel seat lasting operation? A. Well, that could be explained in a few words. My explanation for the heel seat laster would be uniformity. In other words, in the past of course we started out lasting shoes by hand, lasting seats. Then the “niggerhead” was developed and we lasted seats on the “niggerhead.”

Q11 Let me interrupt. The “niggerhead” is also known as the hand method lasting machine, is it? Is that another name for the “niggerhead”? A. The hand method would be years ago, when we would last a shoe just by hand. We would take tacks in our mouth and—you know; but the “niggerhead” is a machine.

Q12 That is just another name for the machine which has been called a hand lasting machine. I think we got a little off the track. What I think you are doing is describing the various methods of lasting heel seats. A. Of course, the latest development is the heel seat laster which, as I said before, gives us uniform seats where we haven't had it in the past.

Q13 Where was the first automatic heel seat laster you ever came across? A. Cincinnati Shoe Company, about eight years ago.

Q14 What was that machine? A. That was the heel seat lasting machine, automatic heel seat lasting machine.

Q15 Put out by what company? A. United Shoe Machinery.

Q16 Considering the heel seat lasting operation generally as an operation, why is it important to have a good heel seat on a shoe? A. Well, it is necessary to have a good heel seat so that you can put your heels on a shoe

Testimony of Edward B. Hancock.

properly. Without a good heel seat you can't get a good heeled shoe.

Q17 Suppose you have, for example, a wood heel; if the seat did not fit it could you make the heel fit the seat? A. You can't conform wood to leather.

Q18 So the leather must be made to fit the wood? A. Yes.

Q19 You have mentioned this first automatic machine you saw, this United Shoe laster. What has been your personal experience with that machine? A. I just don't understand what you mean.

Q20 You have personally had under your charge and have operated, no doubt, this automatic laster. A. That is right.

Q21 I wondered what your experience had been with it. What has it done for you? A. Well, of course, as I explained before, it gave us uniform seats, but one reason I always liked the machine was the fact that when I was superintendent in country factories we could take a boy and put him on this machine and I will say in two days he was an efficient operator, where formerly, when we would break in a man on the bed laster, to give us seats it would take much longer.

Q22 What production would you say you can get on the Model D automatic laster? A. I have lasted on that machine, that is, lasted good shoes, and I have gotten 1200 pair out of them.

Q23 In what period of time? A. Well, in nine hours; that is when we were working nine hours at that time.

Q24 What could you do doing heel seats on a bed machine in a like period? A. Just lasting seats on a bed machine.— I have done that sometimes when we just had this one machine and it would be broken down—I have never lasted much over between five and six hundred pair.

Q25 Do you regard the automatic heel seat laster as an important advance in this art?

MR. TOULMIN: We object, Your Honor.

THE COURT: Of course, that probably is a question for the court. He may tell, of course, what the one does over the other, uniformity of operation, and so on. That of course speaks for itself.

MR. LYMAN: I don't want to force the question, Your Honor. but don't you think it would be of assistance to the court, what a factory man thinks of the machine?

Testimony of Edward B. Hancock.

THE COURT: No. I said he may describe—it is just simply a question for the court, I would say.

MR. HAMMETT: Would it be proper to ask him how he thinks this machine compares with other machines within his personal experience?

THE COURT: I think he may compare the machine with other machines, yes. There is no objection to that.

By Mr. Hammett:

Q26 I would like to ask you how you think the Model D heel seat laster compares with other shoe machines.

MR. LYMAN: The bed machine or other available ones.

MR. TOULMIN: I object. That calls for an opinion. He may ask him for the proper facts.

THE COURT: He may ask, of course, here about the simplicity of the Model D over the bed laster and the results. And if you want to talk about the experience you may do that too. I think he may describe his own experience. That, of course, goes to the weight.

MR. HAMMETT: I think he has already done that.

MR. TOULMIN: He has done that.

MR. LYMAN: I suppose he has covered those things, Your Honor.

THE COURT: He has testified to the simplicity of operation, that he could make an operator of a country boy in two days, as against the other it would take a long time, and twelve hundred pairs in nine hours' time as against five or six hundred by the other.

MR. LYMAN: I think that is probably sufficient basis for a conclusion.

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 You have had experience with bed lasters, have you, Mr. Hancock? A. Yes, sir; I have broken them in.

XQ2 Over how many years has that experience extended? A. I would say I have been an executive over that department for probably fifteen years.

XQ3 And can you tell the court whether the work done under your direction on those bed lasters was satisfactory or unsatisfactory? A. It was satisfactory but not as uniform as we can get it on the seat laster. It was satisfactory because we did not know any different.

Testimony of Edward B. Hancock.

XQ4 And the shoes were made and sold, were they?
A. Oh, yes.

XQ5 A great many hundreds of thousands, were they not, during that period? A. I expect there was, yes, sir.

XQ6 Can you call attention specifically to any complaints that were received from shoes sent out when manufactured on bed lasters by the companies you were connected with? A. We at that time had more returned shoes due to the fact the heels had kicked under, the heels had come loose; more so than now.

XQ7 Weren't the heels put on by a separate machine than the bed laster? A. That is right.

XQ8 How many bed lasters did you have, during that period, under your jurisdiction? A. I don't believe I can answer that.

XQ9 Just approximately. I just want to know whether it was one or two machines or were there a large number of machines in these plants? A. I was general superintendent over two plants and in one plant we had, I would say, only as a rough guess—

XQ10 —Yes, just a rough guess. A. Rough guess, probably twelve bed lasters.

XQ11 In one plant? A. Yes.

XQ12 How many in the other plant, the second of the two plants? A. About the same. These are just guesses.

XQ13 In the present plant of which you are superintendent how many bed lasters have you? A. We are now operating four.

XQ14 They are in daily production? A. Daily production, toes only, no seats.

XQ15 They are still operating to your satisfaction? A. Lasting toes.

XQ16 But they are operating to your satisfaction, aren't they? A. Yes.

THE COURT: We want to clarify that, that four bed lasters are being used only for toe lasting, not heels. A. Not heel seats, that is right.

THE COURT: And this machine in issue is a heel seat laster.

MR. TOULMIN: I am going to ask him another question to tie this together, Your Honor.

THE COURT: All right.

By Mr. Toulmin:

XQ17 Now, Mr. Hancock, during this fifteen years' experience were the bed lasters used for lasting heels,

Testimony of Edward B. Hancock.

that you had under your jurisdiction? A. Up to the last eight years, when we lasted with the seat laster.

XQ18 But prior to that time they were used for lasting heels; is that correct? A. That is right.

XQ19 How many heel seat lasters of the United have you? A. We have two; one in operation.

XQ20 The other is not in operation? A. No; it is a spare machine.

MR. TOULMIN: That is all, Your Honor.

MR. HAMMETT: No more, Your Honor.

Thereupon Mr. Hancock retired from the witness stand and

Rene E. Duplessis

recalled on behalf of plaintiff, resumed the stand and testified further, as follows:

THE COURT: He is for cross-examination.

MR. LYMAN: For cross-examination, and this witness can describe the welt and McKay construction.

MR. TOULMIN: Ask him that question right now.

By Mr. Hammett:

Q15 Mr. Duplessis, I wonder if you will explain for the purposes of the record the construction of the welt shoe and the McKay. A. Well, in a welt shoe, Your Honor, the insole has an upstanding rib on the bottom. The other side of the insole is placed against the last and fastened in place by a fastening, such as tacks. The upper is placed around the last—that is, the center of the upper, and then it is pulled over and fastened with tacks from the pull-over machine. Then it is lasted. The heel portion of it is lasted right over flat, the same as all our other shoes, like the McKay and the cemented shoes, shoes of that type outside the stitch-down. That inward flange is fastened by tacks and held in place. The seat lasting is performed on another machine and it is only lasted to the upstanding rib. The part near the fastening standing up the same as the ribs, that is lasted around the sides and is lasted on the bed machine; the toe the same way. And that is fastened by a wire, two tacks, one at each end of a wire. From that point the shoe is sent to a machine that trims the surplus stock above the fastenings; and then a welt is fastened around it. The welt is brought against the rib in the welting machine and a curved needle goes in and fastens

Testimony of Rene E. Duplessis (Recalled).

that welt through the rib all around from the heel breast on one side, around from the toe end of the shoe back to the heel breast. The shoe is then trimmed again to a point as near the stitches as is consistent with the holding of the stitches. The bottom is filled with a filler, cork or plaster filler of some kind. Then the outsole is placed on the shoe, on the bottom, and covers the whole bottom, heel portion and all. I am just describing the common welt shoe.

THE COURT: I understand.

A. There are variations from this. Then after the outsole is placed on the bottom of the shoe, the shoe goes to the outsole stitching machine and a thread is stitched all through the outsole and the welt edge as far as the welt goes. Then from that point on the shoe is finished the same as any other shoe, nailing, and so forth.

In the McKay shoe there are several types, but the old type of McKay shoe was to assemble the shoe the same as a welt shoe, except the insole is perfectly flat, there is no upstanding rib to fasten to, and the surplus margin of the stock, in the lasting operation at the heel seat and toe, is lasted flat over the bottom. The shoe is then roughed out and trimmed up the best it can be, and sometimes pounded flat as much as possible; then the outsole is placed on, and in most cases in a McKay shoe the stitching is done right through. The outsole may be channelled on the outsole and stitched outside and then stitched through the outside lining, insole and all, and then they trim that flap down and cover those stitches, so it won't show on the inside; they put a sock lining on the inside.

We also have a shoe made similar to that in common use in women's work, and that is a cemented shoe, where they don't use the tacks and they don't stitch it. They just fasten the outsole on, after laying all the stock over the bottom of the insole, and they put a cemented sole on it and then trim it up, finish it up.

MR. LYMAN: I wonder if Your Honor would care to see these (indicating booklet).

THE COURT: I understand.

MR. LYMAN: (Handing photographs to the court): They are pictures of different types at different stages.

THE COURT: I will look at them. Any further questions on direct?

By Mr. Hammett:

Q16 Mr. Duplessis, do you take the last out before you sew on a McKay shoe? A. Oh, yes, we have to.

Testimony of Rene E. Duplessis (Recalled).

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 As I understand it, you are employed by the United Shoe; is that correct? A. Yes, sir.

XQ2 In what capacity? A. I am a machine designer.

XQ3 And you testified yesterday about bed lasters; is that correct? A. Yes, sir.

XQ4 Are bed lasters still being made and sold by the United Shoe? A. To my knowledge they are.

XQ5 What are those bed lasters sold for, for lasting the heels or toes or both? A. Put out by the company as a toe and heel laster.

XQ6 Do these lasters, these bed lasters that you are referring to have any means of adjusting the wipers prior to actuating the wipers across the shoe? A. The bed lasters put out today have a binding screw at their outer ends and those screws engage a slot of approximately a half inch in length, which permits the adjustment of the wipers at their pivot point.

XQ7 And that is a predetermined adjustment, depending upon the size of the shoe? A. I would not say depending upon the size of the shoe so much as whether they are doing women's or men's shoes. The ordinary run, they probably would not touch them.

XQ8 Dependent on the size of the shoe you make that adjustment; is that right? A. I should judge.

XQ9 How long has that adjustment been on that machine, to your knowledge? A. I cannot definitely say, but I should judge somewhere around 1915 or 1916.

XQ10 Tell me, do these bed lasters have heel bands on them? A. Yes, sir.

XQ11 And how are those heel bands supported in the machine? A. The heel band at its rear end is supported in a stirrup that reaches under the heel band and turns up on its inner edge, and at the two outer ends they are supported by stirrups that can be adjusted up and down to place the heel band as close to the wipers as possible. These stirrups are supported on what we call chain arms, and these chain arms in turn are actuated in the operation of the machine by a slide. This slide pushes them inwardly toward the shoe by a spring.

XQ12 Is this slide adapted to push the heel down fore and aft of the machine, as well as to push the ends of the heel band laterally in the machine? A. This

Testimony of Rene E. Duplessis (Recalled).

slide will only push the chain arms fore and aft of the machine. It will not move the heel band. The heel band is fixed in the machine and it has no forward motion in its operation. These chain arms are pivoted approximately in the center on the slide, and the end of the chain arm nearest the band is fastened by a chain which goes around the heel band. The outer ends of these two chain arms are fastened by springs to the frame of the heel band and as the slide moves forwardly of the shoe to close the heel band these springs will yield, permitting the chain arms to pivot about the central fastening on the slide.

XQ13 Have you ever seen any bed laster with means attached to the back of the band for moving the band slightly fore and aft of the machine? A. I have.

XQ14 And how long ago did you see such a construction? A. Well, we made such a construction in 1910 or 1911.

XQ15 And in these bed lasters there is means consisting of some sort of a plunger with a screw on the end of it to adjust, or some adjusting mechanism, to push the ends of the heel band in and out, as I demonstrate by this heel band in my hand? A. Yes, sir, to locate them in and out.

XQ16 To fit the shoe? A. Somewhat.

XQ17 Do you know of any of these bed lasters that the United Shoe has had to take back? A. I don't know of any machine that the United Shoe has had to take back, bed lasters or otherwise.

MR. TOULMIN: That is all with the witness.

MR. HAMMETT: That is all.

Thereupon Mr. Duplessis retired from the witness stand and

Augustus D. Willhauck

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Hammett:

Q1 Please state your name and residence. A. Augustus D. Willhauck, Windsor Road, Stoneham, Massachusetts.

Q2 How old are you, Mr. Willhauck? A. Forty-six years old.

Testimony of Augustus D. Willhauck.

Q3 What is your present position? A. Designer of the United Shoe Machinery Corporation at Beverly, designer of machines for the manufacturing of shoes.

Q4 How long have you been with the United Shoe? A. Approximately twenty-two years.

Q5 Are you familiar with the United automatic heel seat lasters? A. Yes.

MR. HAMMETT: I think this would be a good time to have the witness explain the manufacture of a shoe with particular reference to the heel seat lasting operation, Your Honor. We have some exhibits here which I think will be very helpful for that purpose, and I am going to turn them over to the witness and ask him the question.

THE COURT: Have you those exhibits separately identified?

MR. HAMMETT: Not yet, Your Honor.

THE COURT: We will take a recess and you can get them tagged.

Thereupon a short recess was taken, during which the various portions of a shoe in process of manufacture were marked for the purpose of identification Plaintiff's Exhibits Nos. 5-A to 5-I, inclusive. Mr. Willhauck resumed the stand after the recess and the trial proceeded as follows:

By Mr. Hammett:

Q6 I will ask you, Mr. Willhauck, if you will explain the various steps in the manufacture of a shoe, particularly with reference to the heel seat lasting operations, using these exhibits. First I will ask you to identify these shoe parts which have been marked. Do they illustrate the steps in the manufacture of a shoe? A. They do.

Counsel for plaintiff thereupon offered in evidence the parts referred to, and the same are made part of this record as Plaintiff's Exhibits Nos. 5-A to 5-I, inclusive.

A. In the manufacture of a shoe, first you take this last, 5-A. The next thing that is done is we will have an inner sole with the necessary pieces upon it. That will be placed on that last and fastened to it (demonstrating).

Q7 What is the exhibit number? A. 5-B. It will be held on the bottom of that last by tacks which are

Testimony of Augustus D. Willhauck.

driven through the insole into your last through these holes. After we have reached that stage it is necessary to get a counter, which is 5-C and your assembled upper, 5-D. Exhibit 5-C will be placed in the assembled upper.

THE COURT: Do you want to identify those as you go along and say what they are? I mean for the record.

A. That is a counter (indicating).

THE COURT: That is what I mean. Say what you do with the counter and upper as you go along.

A. That counter is placed in the upper somewhat in that fashion (demonstrating).

Q8 And where have you put the counter, Mr. Willhauck? A. Between the doubler and the lining in this case, which is a leather portion inside of the upper and the lining; and the outer part, material, is the upper. We then have that last and insole.

Q9 —Let us have the exhibit numbers as you go along. A. 5-A is the last, 5-B is the insole, 5-C is that counter, and 5-D is the upper. Now we take 5-C and 5-D, the counter and the upper, and we place in them the last, 5-A, and the insole, 5-B, which is tacked to the last. We place that inside in that manner (demonstrating), send it to an assembling machine, which will position the heel portion of this shoe against the back of the last and down on the insole. The shoe then will be in the condition as exhibited in 5-E. As regards the heel end, you will have an assembling tack here; you will have these two anchor tacks, which is to anchor the doubler, counter, lining and upper to the insole and the section of the heel seat. From there it goes to the pulling over machine. The pulling over machines pulls this forward—

MR. LYMAN: —Pulls what forward?

A. Pulls the upper forward on the last and inserts these five tacks.

MR. TOULMIN: Witness referring to the toe of the shoe.

A. The toe of the shoe, and it is held in that position as now shown on 5-E. That shoe then has the succeeding operations. Now on this shoe here—

MR. LYMAN: —Exhibit what?

A. Exhibit 5-F, they have cemented the toe down to the insole. They have probably done that on a hand method haster around here (indicating), which is inserting these tacks.

Q10 When you say "around here" what do you mean? A. I am pointing the distance from approxi-

Testimony of Augustus D. Willhauck.

mately here on the toe end of your last down to here (indicating) on each side of your last.

Q11 Is that ever called the "shank"? A. In the shank, yes, and down to the breast of the heels. Where the breast of the heel would come would probably be in there (indicating). That would be so with the type of shoe and the heels being used. In that condition there this exhibit would be taken to the heel seat lasting machine, and that is done for the reason that we want to last this heel seat, we want to make every particle of it conform to the wood of the last, and we want to rub down this portion here, which you see is in a very loose condition; smoothly and evenly down to the bottom of that last, or rather, top of the insole, which is resting on the bottom of the last. The reason for that is this, that after this Exhibit 5-H is placed upon here, we are then going to put the heel on there, which is 5-I. Well, to do that, we also must take into consideration the shape of Exhibit 5-I. We can't alter the shape on the heel; that is wood, and if we try to alter it we are going to ruin it. Now, that has a definite relationship to the size of the shoe on which it is going, and we must conform all this material down so that when we get through and have placed Exhibit 5-H on it—

MR. LYMAN: —5-H being what?

A. The outsole, and then the heel on top of that, we have a very nice fit around this particular portion of this heel which is going to rest on the upper leather. We also want to weld a fine line around it for the same reason, and we go to work and we put that into the heel seat laster to obtain those results. After the heel seat laster has lasted it, as shown on Exhibit 5-G, it will come from the heel seat laster in that condition there (indicating). We have lasted over those ears or corners, we have placed it down solidly against the upper surface of the insole, we have fastened it there, we have got it down against the last, the wood of the last, in here, on the breast, on the back seam, and in the corners. The next operation is that this Exhibit 5-H, the outsole, will be placed on the bottom of that shoe (demonstrating). I am trying to get it in somewhat the proper shape but I can't. Then you will notice that the rear portion of the sole has been scarred or cut away here, and also on that edge there, and it will set approximately into this opening when it is really finished.

Q12 What opening? A. The opening that is shown between the edges of this lasted-over margin and the insole.

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Q13 At what end of the shoe? A. At the rear end of the shoe. Now, if we take this heel and place it on there (demonstrating) you will notice, holding it only by hand, that you have a well-defined line and a proper fit, no wrinkles, no bulges, the upper is to the last. There is a good fit. There may be some trimming to do in this particular area (indicating) because we haven't positioned this accurately. You can't under these conditions. And that is the operation of the heel seat laster, prepare it to receive those parts, receive them properly.

MR. HAMMETT: Your Honor, I think it would be helpful at this time to offer in evidence that book Mr. Lyman showed you. It does not contain any advertising matter. Mr. Toulmin would like to see it—in fact, he has already seen it, I think. Suppose I offer it in evidence subject to objection.

MR. TOULMIN: Give me a chance to look at it.

The book so offered in evidence, entitled "How Modern Shoes Are Made", is made part of this record as **Plaintiff's Exhibit No. 6.**

MR. HAMMETT: At this point, Your Honor, we intend to have this witness describe the mechanical construction of the machines in question. We have not brought them into the court room for fear of damaging the floor. I wonder if we could ask you to go out there.

THE COURT: Wouldn't it be better if we all adjourned out there and let him describe it? We will move the court reporter out there. Wouldn't it be better if we did that?

MR. HAMMETT: Yes, sir, I think that would be fine.

Thereupon the court, counsel and witness adjourned to the anteroom where two machines were located, and the trial proceeded as follows:

By Mr. Hammett:

Q14 Are you familiar with this machine Plaintiff's Exhibit 4? A. This is the Model A machine. We have a base, column, head, means for running the cam, operating the tacker bar. This is your main cam. This is the means for applying power to the main cam through here, and so forth. We have here what we call the jack post. In that is a wheel spindle. This is a last rest. This member is a toe rest. Here we have a means, when power is applied, of drawing that jack inwardly into the machine. That power is applied through this lever here. That spring moves the shaft. That guide out here

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has adjustments on, and after we present it to the machine manually and the clutch is started that will draw this member with the shoe on it into the machine. In here we have a heel band. That heel band is supported at the front by these two members here, clips, and two wing nuts, one on either side, of course. In the rear it is supported by this wing nut here. The band has hooked to it a slide member which is—(Witness removes band from the machine). That is the band and that is the clip (indicating) I am referring to, riveted to the band. Those ears project around the body of the screw. That screw is then turned up in the machine. You will notice these supports all have upward movement. The clips are set in here.

MR. HAMMETT: Pointing to the supports in front end of band.

A. When that is fastened it is against the body, so the cylindrical body of that pressure member here has that much movement.

By Mr. Hammett:

Q15 By "pressure member there", for the purpose of the record what pressure member do you mean? A. On the forward end of the pad.

Q16 "Pad" means the same as "band"? A. Yes. That is my error. I shouldn't do it. Now, the support in the rear has the same amount of movement.

Q17 What kind of movement? What direction? A. Upwardly from a stationary position. That handle here is a means of adjusting this pressure mechanism here and the carriage or band forwardly or backwardly in the machine.

THE COURT: In every operation does this move, or just for different sizes?

A. That is only moved for various sizes and any little variations or inequalities in lasting margins; we must act to get it proper. Here we have the wipers. You will see them right in here. Those have links which extend back and are connected to this block here on each side. That block has a racked pinion, certain levers and another rack in back on your main slide which, when it is pushed forward, will swing that front end of these cams inwardly over your shoe. These members here are means of adjusting those levers. If you get down, you may see them as I raise that up.

THE COURT: The adjusting is to cover the difference in sizes.

A. The range in sizes.

Testimony of Augustus D. Willhauck.

THE COURT: And the adjustment takes care of the tacking?

A. The adjustment is also used there. In lasting the shoe you have a little variation in your lasting margin. Some shoes may have a short lasting margin, and, above all, when we drive those tacks, as in the exhibit you will see with the doubler, the counter and the lining, we must fasten them all. Now, if a shoe is properly cut, the chances are if the patterns are right those will come somewhat even. If the upper is back from the inner edge of the counter we must catch the upper also; therefore we will have to sacrifice a little here (indicating) in getting the tack through the inner edge of the counter, or we wouldn't fasten the three members together. That can be adjusted to compensate for that also.

Q18 In answer to His Honor's question you said it will adjust the wipers to the position of the tackers. How will it adjust the wipers to the position of the tackers? A. Because these tacking members here, you will notice that that tacking member extends backwardly of this screw. That screw is in this one here. That distance is predetermined and then it is set. There is no further adjustment of that necessary. The tackers will be taken care of because the tackers are moved with the wiper.

THE COURT: The tackers are just ahead of the wiper. A. Predetermined, a fixed distance.

THE COURT: All right.

A. These are your corner tackers and this is your rear tackers. The tacks are fed to that unit through these grooves here and, not going into a great amount of detail, are picked off by this separator, which goes back, picks them up and drops them all into a feeding plate and then down into the machine, and they are ready to be driven at the time the shoe has been wiped over and at the proper time of driving, which is taken care of by the cam and head. This cam, you will notice if you step on this side, Your Honor has a drop-off there. Now as that machine rotates around power members, rotates in this direction (indicating), when that gets to the point, this driving plate is allowed to drop off and the timed relationship between this and the wiping movements is such that every member of the machine is at rest, in its proper position, excepting this particular portion here to drive your tacks and then come back on the rotation of your machine and load your springs for driving again. In here we have your hold-down. That is what we place the insole in when we put a shoe into the machine manu-

Testimony of Augustus D. Willhauck.

ally. Now in that main cam you will notice there is a track right here on the face that has—

Q19—Pointing to front face of cam? A/ Yes.

Q20 Or what are you pointing to? A. Pointing to the front face of the cam, and that member has a cut there and another out here. That controls the amount of movement that will move upwardly when your second wipe is to take place. Now, to get the motion of that hold-down, we have over on this side this lever with a cam on it, which is set into this cut here, whatever amount of depression you wish to have. This here is to control that amount. In other words, if we leave that in that position, this roll is going to stay right where it is. If we loosen it up and let this go rearwardly, it is going deeper into that cut, and when it comes forward it is going to depress the hold-down much further than it is set now. This is the adjustment for controlling the amount of throw and amount of rearward motion in this machine.

THE COURT: This hold-down; the principal object is just to pull that heel or shoe right into place so there will be no movement—A.—No, Your Honor. One of the principles of that, or the principle of that hold-down is this, that it will position that shoe at the proper level to get your proper wiping condition on those materials. In other words, you couldn't put this shoe in and have it so high that your wipers would go over there (indicating.)

THE COURT: I get your point. A. It determines your first wiping level and your second, when you wipe over that heel seat. Now this other track here (indicating), which is the center track in the cam is the one that imparts the forward motion to your wiper, and it also, through the second lever, imparts motion to this member, which gives you the inward motion at the forward end of the wipers. On both sides of the wiper there is a slide. There is a cam on the slide and that slide extends forward on carriage grooves in which the wipers are allowed to slide in that way. On the side there are racks which will engage the pinion and impart the motion here. Now on the back of this cam we have another track. That track operates the band closing and pressure applying mechanisms. This lever, when the cam rotates, is forced in that direction (indicating). It is connected here through a shaft that has a pinion cut on here and extends into the center of the machine, and that is also geared and the rack is set on top of it. There is one center rack and then two side racks with an

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equalizer in it, and then that operates on these bell crank levers here. Those are the racks there, and as these are drawn rearwardly the shank swings these levers rearwardly, closing with an even pressure the opening at the rear of that band. That is, outside of going into a brake cam, a brake operating cam covered up in here which will oscillate, roughly an outline of what that machine attempts to do.

In that same machine what you really do, you take a last, you place it on that spindle or last pin. This is for the purpose of leveling the heel seat; this adjustment here allows it to be leveled that way.

Q21 Did you describe these corner pressing members? A. No. I have not gone through that yet. I am just going through the operation roughly, to give the sequence of operation.

THE COURT: What you just referred to there is covered specifically by one of the claims, is it?

MR. HAMMETT: Yes, Your Honor.

MR. LYMAN: This one doesn't have the Hoyt.

MR. HAMMETT: No, but it is the corner pressure members of that machine (indicating) as distinguished from this machine (indicating other machine) that are covered in the Hoyt patent.

THE COURT: The Hoyt patent is not covered in this machine (indicating Exhibit 4) but it is included in this one (indicating Model D).

MR. HAMMETT: Yes, sir.

THE COURT: What do you call that?

MR. HAMMETT: It is not in yet.

THE COURT: This (indicating Exhibit 4) is Model

A.

MR. HAMMETT: Yes, sir.

A: You place that last on the last pin, you present your shoe manually to the machine, and as he does he will bring it up under that shoe last by pressing that lever.

MR. HAMMETT: Witness steps on left treadle.

A. In that position (demonstrating). After the heel is observed to see if the shoe is in proper alignment, he will step on this right treadle (demonstrating). He will probably be in a position about like that (demonstrating). When he steps on that treadle the machine starts to operate. The first thing that will happen on that, this member should draw into the machine—in other words, drawing it away from me and pulling it into the machine.

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By Mr. Hammett:

Q22 Pulling what into the machine? A. The shoe on the last. That, through these members here, is applying power through the shaft and on this member which engages that shaft. The next step, your band and shoe last—you will notice the position of this cam on this side. It is about to come in contact with the raised portion of that cam surface, and this one here is put in contact also. Now that means that your band is going to start to close and your shoe rest is going to push your shoe down through the band. That would be the next function of that.

Q23 Do you use the terms "shoe rest" and "pull-down" as synonymous? A. Simultaneously (demonstrating).

THE COURT: I get it.

A. It is very fast even when it is slow because they are close together. Now you are getting your first over-wipe, and in your first over-wipe the shoe is a little higher than is required to get a good lasting job. This will gradually break over that material that is standing there (demonstrating). Now you are retracting. This shoe rest should have come up a little at that particular time. You will notice there was another slight dip in this cam that should have put more pressure on the heel band prior to the wipers coming on. I believe it did. It is slight; you can't see it. The shoe rest will let that come up and you are getting ready for the second wipe. Now you are retracting. Now you are going into your far corner (demonstrating). Now you will notice the angle of drive on these wipers. The idea of that is to assist in dragging that material in toward the center line of the shoe, because the attachment will be at that angle. The machine from then on will simply release the shoe and last—of course, we haven't driven any tacks—and get the machine ready for an operation on the next shoe. You will notice that the drivers are coming back. Now this in-drawing is beginning to release, the band is beginning to release, and the shoe will come out. We haven't been able to get the proper working pressure and we could not turn the heel; therefore, that is not an exact duplication of what the machine will do.

Q24 That completes your explanation, does it? A. Yes.

Q25 I want you to tell us how the pressure is applied to the corners of the leather heel. A. In this machine here, and it is very essential that we get it, is a

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pressure in this particular area here (indicating). You will notice that that is very soft; we want to get it right down against the wood. In this machine here that is applied through a flat spring, with two pressure members upon it. I will take this out again so you can see it. You will notice this member here. Now, if you wish, I can take that right out of the machine so you can see it.

THE COURT: Not unless you want to. I can see it.

MR. TOULMIN: It is shown in the McFeely patent, Your Honor, just exactly.

A. On that flat spring you will see these two metal faces which contact the back of the band in that. As you push the shoe in, that spring is made so it forms a given pressure on the small last. Of course, in a larger shoe that curvature is going to get bigger; consequently it is going to distort that spring or change it from the position where it now is and apply pressure also. That is the way the pressure is applied in this machine to the particular corners.

MR. HAMMETT: While we are out here, Your Honor, I intended to have the witness point out the difference between this machine and—

THE COURT: —Just a minute. Do you want to cross-examine as to this machine now, or do you want him to—

MR. TOULMIN:—I think we had better do the whole thing while we are out here or we will have to ask him to come back. While we are on that subject—I don't want to delay, Your Honor—I am going to object to this machine because it does not embody certain features of the second McFeely patent. I am going to object to it and then I will list those objections. They are quite lengthy. Then that won't interrupt the examination and when you sit down to study it you will get a complete picture.

THE COURT: All right.

By Mr. Hammett:

Q26 I will ask the witness what model that is. A. The Model D on women's; Model E for men's work.

Q27 Can you identify that machine? A. That is the Model D machine, commercial machine.

MR. HAMMETT: I will offer that in evidence, subject to objection.

MR. TOULMIN: Let the record show we object to this machine as not being a faithful, correct representation of the McFeely patent in suit.

THE COURT: You are later going to point out your specific points?

Testimony of Augustus D. Willhauck.

Mr. TOULMIN: I will point them out later, Your Honor, and in order not to delay the examination now I will defer that.

The Model D machine of plaintiff's manufacture is made part of this record as **Plaintiff's Exhibit No. 7.**

By Mr. Hammett:

Q28 What models of heel seat lasting machines is United now putting out, Mr. Willhauck? A. Now putting out the Model D machine and the Model E. The Model D is for women's work; the Model E is for men's work.

Q29 Can you identify this machine? A. Yes.

Q30 What is it? A. Model D machine.

THE COURT: That is Exhibit 7.

Q31 That is offered as Exhibit 7. I will ask you, Mr. Willhauck, to compare the construction and operation of the Model D, Exhibit 7, with the Model A, Exhibit 4, with particular regard to the heel band and its operating mechanism, the tackers and the wipers. A. The Model D machine has here the wipers, has the hold-down, means of delivering and controlling the tacks during driving, means of operating the wipers on their forward edge, and means of driving through a central slide. It has the band, it has the supports for the band, and the pressure applying members. There is a slight difference in construction. The principle of applying your pressure is still in the Model D the same as in the Model A on the forward end of your band. The construction here, of course, is a little more rugged. Also, it is a positive connection in here.

Q32 That is because there are no springs in there? A. That is right. There are springs in those arms but they do not apply pressure to the band. Then the adjustment of the band, it is the same identical means, back and forth. The principle of your wipe in the Model D and the principle of your wipe in the Model A is the same, identically, but they are driven a little differently. The principle is there. They must wipe and wipe over the shoe and wipe inwardly over the shoe and press and compact that material down where it belongs. The tacker is here on top of your wiper, fastened to it.

Q33 Are those wipers adjustable, Mr. Willhauck? A. These wipers are adjustable in the Model D machine. They adjust them from a little different position.

Q34 How do you adjust them? A. We have on the right-hand side of the machine here this hand wheel.

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As we push that hand wheel in and engage the end of a beveled gear which has a slot in the hub, we can turn this. You will notice that these members are moving open (demonstrating), that is, this one. That is, the adjustment adjusts both sides simultaneously for the same reason, and they have absolute control over the wiping-over of the shoe on different sizes and any inequalities in the lasting, as I have explained in the Model A. That is the adjustment for your wipers in the Model D. In the Model A, as I pointed out, they are individual.

Q35 Does the adjustment of the wipers do anything to the tackers? A. In both machines the tackers are carried with the wipers, therefore when the wipers move the tackers move with them. Your one adjustment takes care of both. And the tacks are a predetermined distance in this machine from the edge of the wiper. It is built in. The same in the Model A, only they are set on top and moved and fixed and located.

Q36 In the power operation of the machine do the tackers and wipers move together? A. They do. They move together in this the same as in the Model A.

Q37 How do the tackers drive with relation to the edge of the wipers? A. In the Model D machine here the tacks are driven through holes in your wipers. (Witness removes heel band); You will notice there your holes run right through the wipers.

THE COURT: Is that the specific claim we are concerned with?

MR. LYMAN: Mr. Toulmin is going to object to that machine because there is that difference between the Model D and the Model A.

THE COURT: Is this feature one of the seven claims, the driving through the holes in the wiper?

MR. HAMMETT: Not specifically.

MR. TOULMIN: Yes, Your Honor, there is one claim that involves that relative movement between the tacker and the wiper.

THE COURT: Is it or isn't it?

MR. LYMAN: We say, Your Honor, that that specific change does not make any difference, that it is within the claim of the McFeely patent, even though in this machine the tacks are driven through holes in the wipers, whereas in the form as shown in McFeely they are driven a little ahead of that.

THE COURT: I understand that, but is this feature one of the seven claims?

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MR. LYMAN: Yes, it is. The feature of the claims that we have, that deal with the wipers and the tackers, is that they are so arranged that they move together in any position of adjustment in the machine which is had, whether they are constructed as shown there (indicating Exhibit 4) or there (indicating Exhibit 7.)

THE COURT: I mean the whole feature.

MR. LYMAN: Not that particular thing.

MR. TOULMIN: We have a sharp issue on that. That involves one or two claims, I think, and that issue of the difference between those machines is the issue of non-infringement on those two claims and is a vital point in our case.

THE COURT: That is the reason I am asking it now. In your machine are the tack holes through the wiper?

MR. TOULMIN: Yes, the tack holes are through the wiper, according to the old Copeland patent, and in their Model D under the second McFeely patent they do not tack through the wiper but tack to one side of it and have to withdraw the wiper on the third wipe, Model A.

By Mr. Hammett:

Q38 Now, Mr. Willhauck, have you demonstrated the lengthwise adjustment of the heel band or not? A. I believe I did when I showed this member adjusting the heel band backwardly and forwardly, the same as it does in the Model A.

Q39 And does it or does it not slide in the clips or presser members? A. It does slide in the clips, the same as your Model A.

Q40 Are the presser members on the two sides of the open end of the heel band independently adjustable as to length or not? I mean these rods (indicating) which apply pressure to these members? A. yes.

Q41 Now, Mr. Willhauck, are the wipers in this machine independently adjustable or not? A. In the Model D you can adjust the wipers on this machine independently, if you wish to, by these members here (indicating), one on that side there.

MR. LYMAN: You can also adjust them together? A. Yes.

Q42 How about the means for applying pressure to the corners of the band? A. In this machine here we applied pressure to the corner of the band by these arms here. They have behind them this plug, and that is a spring, and behind that is a nut. Those arms are

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pivoted on a stud in back here. Now, in that construction you can get light, medium or heavy pressure, due to the setting of this particular nut here. You also have a very rugged construction there. You have a free turning movement of the arms, and with that construction of those members there they are still applying pressure to the corners, identically the same in principle, the same as we are here. The method of applying it is a much better method; there is no doubt of that.

MR. TOULMIN: Let the record show the witness is referring to this one as the Model A.

MR. LYMAN: He went into the statement that the much better method was with reference to the Model D.

MR. TOULMIN: But he said it was also the same as the Model A in principle.

THE COURT: Will you just make a short statement as to what would happen to the operation of this machine with this heel band out of there? A. In this position here?

THE COURT: Yes.

A. We can operate that machine and probably ruin the shoe.

THE COURT: What I would like at this point, you see Mr. Toulmin has stated that they have taken that heel band out altogether.

MR. TOULMIN: No, Your Honor; no. I did not mean to interrupt you but I want to correct you. The heel band stays in but it is not supported at the back. This wing nut here is off toward the back. This is cut off, just dropped off, then supported here (indicating).

THE COURT: You still keep this but you just simply support it in a different way?

MR. TOULMIN: Without the support in the back.

THE COURT: I was just wondering, because you said something that your two-dollar shoe did not require the care, and so on. I just wondered.

MR. TOULMIN: This back support is completely detached but you do support it in front here.

THE COURT: You take this off (indicating)?

MR. TOULMIN: That is correct. I will show you on our machine.

THE COURT: I knew you said you sawed it off but I did not know you meant just this rear support.

By Mr. Hammett:

Q43 Mr. Willhauck, is pressure applied to these two pressers members at the open ends of the band yield-

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ingly or rigidly? A. No, rigidly; that is rigidly applied.

Q44 A minute ago you said there were some springs in there but they did not have anything to do with the pressure. What do they do? A. They are just simply in there so when we set this machine in, in a certain function of this machine, which we can do by these adjustments here, to get more throw, under certain conditions in the operating of the machine this band is tending to be open before the wiper is moved, and if that yield wasn't this way we would break something. In other words, the wipers are moved over and these cam faces are away in; that is, they are closed about this member, like that. Now the wipers will not move it to get that shoe out and drop it, so we don't disturb what we have done. The band is going to tend to open before these wipers move; therefore the cam will yield on this spring. There is no yield when the operating pressure is applied.

Q45 Is the amount of initial downward movement of the hold-down adjustable in this machine (indicating Exhibit 7)? A. It is.

Q46 Please point out how. A. In this machine here your downward motion of the hold-down is done through cams here. Now on here you have this nut. We can position that deeper or higher than that cut and regulate the amount of initial depression we want to get. On that same cam face we also have a cut which controls the amount of hold-down for the return of the last. That is how we can control the movement of that hold-down. Then we have this cam here. We have a track that has two wipers. It is operated through the roller, through the main slide, with the members which carry the wipers out. And in here we have racks, second levers, pinion and racks in here which, when the cams move forward, exert a pressure on these members and hold the forward ends of the wipers inwardly over that shoe. We have here a lever which operates the jack, the heel band portion, and the lock on this model like on the Model A. It operates identically the same. We present the shoe to the machine. In this machine we trip it with this handle here instead of stepping on it directly. It trips the clutch.

THE COURT: That is the same as was at Krippendorf's this morning.

A. That is the same. On the opposite side we have the drawing in lever, which is this lever here. This is

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different in construction. It draws the jack in through that rack which you can see better here. When you trip the clutch the machine takes hold of that and pulls it into the machine, the shoe against that band. Then your sequence of operations on this machine is practically the same as in the Model A. The band closes, the shoe rest comes down and the band is closed, the wipers come in first to wipe, a little more pressure, the wipers are withdrawn, a little heavier pressure on the band and against the jack on the second wipe, and then you have a means, the same as over there, of depressing the shoe, opening the wipers, releasing of the proper mechanisms, and let the jack fall outwardly into this position.

THE COURT: Are there any McFeely improvements of your Model D over Hoyt, or does this just combine the McFeely with Hoyt? There are no new McFeely improvements in Model D? A. No.

THE COURT: Everything is in there (indicating Exhibit 4) of McFeely, and Model D represents McFeely plus Hoyt.

MR. LYMAN: That is right, and Mr. Toulmin contends it is a modification, and so on.

MR. TOULMIN: My position, Your Honor, is that as it is changed in the transfer from A to D, it has changed McFeely in a number of particulars.

THE COURT: While we are here on that subject you are not making any additional McFeely claims, even though the McFeely features are better than these?

MR. LYMAN: No, no.

MR. TOULMIN: So far as I am concerned, Your Honor, so long as you are not misled as to certain features, I don't think this machine is material. You can look at Exhibit 4 and get the results.

THE COURT: That (indicating Exhibit 4) contains all of the McFeely, but this (indicating Exhibit 7) combines the McFeely —

MR. HAMMETT: — Plus Hoyt.

MR. TOULMIN: I want to make my position plain on that, that there are fundamental changes in this (indicating Exhibit 7) over McFeely.

THE COURT: I understand that.

By Mr. Hammett:

Q47. Mr. Willhauck, does this Model D machine have what we call the "upwipe"? A. It does.

Q48. Does Model A have it? A. It does.

Q49. I started out by asking you—but we got a little off the track—what are the differences between the Model A and the Model D? A. The differences are, as I

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say, you have got your wipers here and you have got your tackers fastened to your wipers. In this machine here (indicating Exhibit 7) you apply the pressure to your band through rigidly mounted members.

Q50 At which end of the band? A. The open end of your band.

Q51 All right. A. You apply pressure at the corners of your band through those pivoted levers and the plungers. The principle of applying it is in the Model A better than in the Model D, much better. Now then, on your Model D you also have a little different means of operating the side wipers on your cam.

Q52 What I am particularly interested in are the features in suit, which are the heel band, wipers and tackers.

THE COURT: Specifically, what are the two Hoyt features in this (indicating Exhibit 7)?

MR. LYMAN: Your Honor, may I explain this?

THE COURT: Yes.

MR. LYMAN: The Hoyt features are, in the first place, that the pressure connections between the operating member and the forward ends of the heel bands are made unyielding right where my fingers are, unyielding on the compression movement—there are very definite reasons for that—whereas the pressure members toward the bight of the band are yielding.

MR. TOULMIN: That would be on the extreme end?

MR. LYMAN: Yes. Then, in addition, the Hoyt covers that particular—can we take this off and see the pressure members in the back? (After a part was taken off): There are some arms here—you can't see them very well—at this point here (indicating), but there are a couple of pivoted arms in here that are freely moving. You can see it from some drawings; we have a thing that will show it relates to the construction of that particular part of the mechanism. The Hoyt invention, so far as we are concerned, has to do with the construction of these particular parts that I am pointing to here (indicating), which exert the pressure upon the heel band, and that is all it consists of, a couple of swinging pivoted members there that are pressed in by these spring-driven members here (indicating).

THE COURT: I see.

MR. LYMAN: We will have another assembly. That is where the Hoyt improvement is.

At this point a recess was taken until two o'clock in the afternoon of the same day, Tuesday, January 17, 1939.

AFTERNOON SESSION.

TUESDAY, JANUARY 17, 1939.

Court met pursuant to recess, counsel being present as heretofore noted.

Thereupon,

Augustus D. Willhauck

resumed the stand and testified further, as follows:

By Mr. Hammett:

Q53 The machines which you were describing this morning, namely, the Model D and the Model E to which we referred, what types of shoes are they used on?

A. The Model D can be used on women's work, McKay or welt; the Model E is for men's work, McKay or welt.

Q54 The Model E to which we referred, I wish you would compare that with the Model D a little more. How does it compare with the Model D?

A. The Model E machine is built for men's work. It is a heavier constructed machine. The principles of operating a heel band and wiping and tacking units, as far as adjustments are concerned, are identically the same as Model D. The jack, instead of being operated manually, is operated by means of a hydraulic unit. In other words, you have one treadle and you simply depress the treadle and the hydraulic unit goes into operation and relieves the operator of that motion by putting the jack in and bringing the lever down and back.

Q55 Otherwise the cycle of that machine is the same?

A. The same.

Q56 I want to be sure one thing is clear. With that adjustment on the side of the machine, when you slide the heel band lengthwise of the shoe do the clips and pressure members at the open end of the band move lengthwise or not?

A. No, they do not; they remain stationary.

MR. HAMMETT: I would like to bring out these sub-assemblies to which we referred, Your Honor.

Thereupon two devices were produced by counsel for plaintiff and placed before the court, after which they were marked for the purpose of identification **Plaintiff's Exhibits 8-A and 8-B.**

Testimony of Augustus D. Willhauck (Resumed).

By Mr. Hammett:

Q57 Now, Mr. Willhauck, what are these sub-assemblies which we have produced? What do they illustrate?

MR. TOULMIN: Before you answer I would like the record to show, if the court pleases, that we are going to object to both of these exhibits because they do not represent the construction of the patents in suit. They have some features of radical departure from the two patents in suit. I want the record to show that now and I am prepared to state some of the differences I can observe standing here. I have only been here a couple of seconds to see the differences between these two models and the patents in suit. I wish the record to show that the problem before the court, in our judgment, is the difference between the patents in suit and defendant's construction, and not between some models made up to represent plaintiff's patents, which they do not do, and defendant's construction. I have no objection, and this defendant wants to make it clear, to anything that will be educational and helpful to the court. As a matter of duty I must call the court's attention to the fact that these two models, 8-A and 8-B, do not represent in some essential features the patents in suit.

MR. LYMAN: Perhaps it would be well to let the witness state what they are before you make your objections.

MR. TOULMIN: I want that to be clear before anything goes on the record.

THE COURT: Of course, they are going to be used at this time merely for the purpose of illustrating certain points and to enable, as I understand it, the court to more clearly understand the operation of the claims in issue. Is that the point?

MR. HAMMETT: That is right, Your Honor.

MR. TOULMIN: If they are erroneous in their construction the court will be misled.

THE COURT: Of course; you have a perfect right to cross-examine, and I think at this time you may have an exception and then you may cross-examine.

MR. TOULMIN: When will it be Your Honor's pleasure for me to state what I object to about these? When they get ready to offer them? I will do it whenever it is agreeable to you.

THE COURT: I think that would be the right time. You can do it now, if you want to.

Testimony of Augustus D. Willhauck (Resumed).

MR. TOULMIN: I would rather do it now, if the court pleases, if I may, because they may not offer them for some time.

THE COURT: That is all right.

MR. TOULMIN: In the exhibit marked for identification 8-A, as I see this model it lacks the main spring.

THE COURT: I wonder if we wouldn't make more progress if you let the witness point out what he wants to describe here. It may be, of course, that some of the things that you object to as missing are not essential for this purpose.

MR. TOULMIN: No, they are essential, Your Honor. Of course, I will defer to the court's wishes.

THE COURT: All right.

MR. TOULMIN: I point out in the model Exhibit 8-A for identification, which I understand is to represent both the McFeely and the Hoyt construction, that in the McFeely patent in suit this model omits the spring shown in Figure 4 of that patent, which I think is marked 128, without referring to the specification. It is the major compression spring through which the power is transmitted by the handle on the model or by the cam and lever on the machine, through the bell crank system to the ends of the heel bands. In this construction there is also no separation, as I can see it as shown in this McFeely patent, Figure 4, at the connection between the bell crank and the end of the heel band.

With reference to the Hoyt patent, which this is supposed to represent, the two levers 240 and 242 in the Hoyt patent do not have any set screws to limit their movement to render them immobile, because the claim involved says that those levers must be freely or loosely mounted. In the model set screws have been applied which bear against the support for the back of the heel band and the outer ends of these arms on the other side engage against the plungers, so that they become immobile, which is contrary to the teaching of the patent which says they must be mobile. I object, therefore, to the set screws because they completely controvert this method of operation as taught by the Hoyt patent.

With reference to model Exhibit 8-B, which I understand represents the Model D in the next room, of the United Company, I can't tell, but apparently it also lacks the spring, the main spring to which I referred in connection with Figure 4, as well as it lacks the small springs 132, all of which have to do with the spring movement at the outer ends of the compression arms on

Testimony of Augustus D. Willhauck (Resumed).

the heel band, which connection is made an element, a particular element of several of the claims, and its presence or absence is material in this case.

We further object to this model because, like Model D, to which we also object, it shows the application of the tacks through the wipers, that is, the wipers and tackers have no interconnection between each other that is separate and apart from their attached means. They are attached together and moved together continuously. In this model Exhibit 8-B these tackers and wipers make two movements and always together, and the tacking is through the wipers. In the McFeely patent in suit the wipers make three movements, two with the tackers and wipers moving together, and then due to the interconnection specified in two of the claims, the wipers are held against further inward movement on the third stroke and the tackers are moved inwardly and tacked within the wipers. This Exhibit Model 8-B does not have this movement, which is essential in connection with a number of the claims.

Furthermore, in Exhibit 8-B, instead of having, as in the McFeely patent, the three wipers, as specified by this arrangement, there are only two wipers. These features, if the court pleases, are all essential elements in the claims and are material to the determination of this issue. For that reason we object to these models, as being misleading.

THE COURT: Well, I guess we had better consider that. What do you have to say about that?

MR. LYMAN: Your Honor, these models don't purport to represent the structure as shown in the McFeely patent. They are models to show Your Honor just how the Model D construction is. They are Model D in both cases. They give you the means of comparing Exhibit D with the patent, and if my brother takes the strange position—strange to us—that the Model D is not an embodiment of the McFeely patent, in order to pass upon that objection you would have to see what the Model D construction was. These are parts of our Model D construction.

THE COURT: Of course, you are relying upon your claims in the McFeely and Hoyt patents, and if there is any merit to the objection here I think that it shouldn't be lightly considered. The point is that if you are attempting to establish your McFeely patents by a mechanism that isn't in fact a McFeely patent, it would seem the objection is well taken.

Testimony of Augustus D. Willhauck (Resumed).

MR. LYMAN: You can't tell whether it is the McFeely patent or not until you see what it is. That is the point.

MR. TOULMIN: The trouble is, Your Honor—may I say this to you—we have gone along here for nearly a day and a half and we haven't yet had the McFeely patent or Hoyt patent explained to the court in detail, so you would have some standard of comparison. What you have got to determine is whether we have taken the claims of the McFeely and Hoyt patents as compared with our machine, and it is improper to have the court compare a model which they say is McFeely, which has been made up, with a machine of our construction, and we object to that method of proving a patent case, because it is contrary to law.

THE COURT: I much prefer to determine this case, in view of the objection, without reference to the two models, if there are any essential features in those models there that are not in the McFeely patent. Now, just for the purpose of keeping the record straight I would much prefer that this feature of the case be withdrawn and you consider it and see whether you want to press the point or not. At this point I don't think we want any further testimony unless you are able to overcome these objections, because it appears that, so far as those two exhibits are concerned, we ought not to use them at this time.

MR. LYMAN: I think this, Your Honor, that it is time that Your Honor knew what the claims we are relying on go to, and I didn't speak of that in the opening yesterday because I knew that until Your Honor had seen the machines you would not comprehend what the subject-matter is. Now I think since Your Honor has seen the machines that I ought to take a little time in order to explain in detail.

THE COURT: I think that is all right.

MR. LYMAN: Then when I have done that I will talk a little further about these mechanisms, which are not presented as models of the patents in suit at all. They are simply to show the internal parts of that machine that we have seen this morning, as an exemplification and a further illustration of what there is in the Model D machine. That is all they are and all they purport to be, so Your Honor can see, as you could not see by looking at the machine itself, how these things work. And I don't think that it is necessary for Your Honor to pass at this time—certainly it is not necessary

Testimony of Augustus D. Willhauck (Resumed).

for Your Honor to pass at this time upon the question of whether the Model D machine is an embodiment of the McFeely patent, which we certainly say it is, not literally the same but it has the principles—but in order to pass upon that question, since it is challenged—and I hadn't any idea that anyone would have the temerity to challenge that proposition—but since it is challenged the only way Your Honor can pass upon it is to know what the construction and operation of the Model D machine is.

THE COURT: It seems to me it is a very serious proposition to offer two models that embody features that are not claimed in the patent to help establish your patent.

MR. LYMAN: These are offered, Your Honor—

THE COURT: —I understand that. Some of these patent cases turn on very close points, and I dislike, of course, to have any question of evidence raised that might turn the case and, as far as I am concerned, your machines in there are just as informative as those two models there. It is up to you, but I don't think we ought to go further.

MR. LYMAN: The thing is, Your Honor, we need something to show to the Court of Appeals the detail of these machines we are talking about. Please bear this in mind, that the witness has not been allowed to answer yet as to what these things are. Now my brother comes along and says "I assume this is a model showing the McFeely patent." It is not so at all. It is just actual parts of the Model D machine that we have seen arranged so that we could see them go through their paces, see the particular mechanisms that actuate them, see that Hoyt improvement, which we could not see actually in the machine this morning. No ruling is required at this time as to whether the Model D machine is in conformity with the McFeely patent or not. That is not the question. It is simply an illustrative model which we really need to explain the case to the Court of Appeals; we really need it in order to explain some of these details to Your Honor. But I think that first, if I may be permitted, I ought to explain now just what we are complaining of in this case and what these claims mean.

THE COURT: I think that might be better, and of course that may alter this.

MR. LYMAN: * * * Now the other two claims, 68 and 71, relate to upwiping. Let us read claim 68:

• Testimony of Augustus D. Willhauck (Resumed).

“In a machine of the class described, in combination, a support for a last and shoe, power operated means to engage and clamp the upper to the sides of the heel end of its last”—

That is this power operated means for clamping or putting pressure on the heel band to clamp it to the heel—

“means for relatively moving the shoe support and said clamping means substantially perpendicularly to the plane of the shoe bottom to cause said clamping means to wipe the shoe stock toward the bottom face of the last,”

Your Honor sees what that means. If you have here a band, you have a last in it here and you clamp the heel band to it and then move the last down and let you get what they call an upwipe movement. You have heard them talk about that. That is what two of these claims are particularly directed to, this one and another one, that is, to movement but the upwipe.

THE COURT: While you are on that point, do we understand that your machine does not upwipe?

MR. TOULMIN: It does not have upwipe, and Mr. Lyman states in his trial brief that the machine they inspected at Portsmouth did not have upwipe, and if the rest of the machines are like that then they all did not have upwipe.

MR. LYMAN: The machine which we were allowed to see at the Williams Portsmouth plant, Your Honor, had a cam of such a nature that it could not produce this upwipe movement. In that respect it was unlike the plaintiff's machines. We will have evidence on that point. All we have to say on that is that if the machines were all the same as that machine and always have been with regard to that cam, then this claim 68 and claim 71, which are directed to the upwipe, are not infringed.

MR. TOULMIN: We say, Your Honor, that we think claim 42 is also an upwipe claim.

THE COURT: I just wanted to follow, and if the machine is that way, that rules out 68 and 71 and eliminates the necessity of proof by plaintiff to sustain those two claims.

MR. LYMAN: Yes, Your Honor.

THE COURT: All right.

Testimony of Augustus D. Willhauck (Resumed).

MR. LYMAN: So much for the McFeely patent. I hope by delaying this exposition of the claims I haven't done anything that has confused the court, but I thought that until Your Honor had seen this mechanism you wouldn't be in a position to comprehend what—

THE COURT: —No, not at all. It just forecloses a contention and, as I say, we are saving time, as I see it. If you say that the defendant's machine doesn't provide for upwiping, then it eliminates the necessity of covering 68 and 71 because that is no longer in issue. * * *

THE COURT: While you are on the subject now, the suggestion is there are set screws. Are they necessary?

MR. LYMAN: I don't know. Is this (indicating on model) what—

THE COURT: —That is here (indicating on model).

MR. LYMAN: What are these, Mr. Willhauck? Just informally explain.

MR. WILLHAUCK: We can take those set screws out and throw them out of the window.

THE COURT: What are they for?

MR. WILLHAUCK: They are for this purpose. We adjust this band down for a small shoe and then we control this pressure so we do not have abnormal work to overcome that pressure in adjusting the screw to a small shoe. We could take them out.

MR. LYMAN: Have they something that is super-added on?

MR. WILLHAUCK: They objected to the force when these members (indicating) were squeezed in. They had to ram back too far against them. They can run it that way—no objection to running it that way at all.

MR. TOULMIN: You are referring to Exhibit 8-A.

MR. LYMAN: You can't do anything with those things.

MR. WILLHAUCK: That is too heavy to operate with your fingers.

THE COURT: The point is that originally this was done without—

MR. LYMAN: —Your Honor, those were not in the original machine, but as far as the functions are concerned those levers have no deterring effect on it; in fact, it is a help. It may be a little difficult to explain, but you have a pressure. Now, to make these things operate they must be set to a normally small heel portion of the shoe. If you determine what you want there, and you let these things fly away back here, you can put the shoe in because the levers will abut against here—

Testimony of Augustus D. Willhauck (Resumed).

that is all—but the operator will have to work harder to overcome your pressure. The principle is still the same.

THE COURT: Is this a refinement over the original?

MR. WILLHAUCK: It is a refinement. That is about what it amounts to, just simply to help the operator. It is—

MR. LYMAN: —You are asked if it is a refinement of that.

MR. WILLHAUCK: I would call it a refinement on that particular portion.

THE COURT: That would mean something that makes it a little better but it still is the Hoyt?

MR. WILLHAUCK: It is Hoyt.

MR. TOULMIN: The claim says these two arms must be free (indicating). When you put the set screws in, which are not shown in the Hoyt patent, they are not free. Therefore it is a different combination than is called for in that claim.

THE COURT: Is this (indicating) free?

MR. WILLHAUCK: If I take these set screws out here, understand, and I have at first sufficient pressure on these members and let this abut against this solid member here. Am I clear?

MR. TOULMIN: You have not answered His Honor's question. We want to know if those arms would be free if you take the set screws out.

MR. WILLHAUCK: Those arms would be free to move in further but the point I am trying to make is this: Unless at that time the springs have been relieved of all their tension you will have the same identical condition that you have now.

MR. LYMAN: Take out those set screws and see what will be the situation.

THE COURT: That is one of your objections.

MR. TOULMIN: Yes, because that is a fundamental element of the claim.

MR. LYMAN: You can't tell whether this is an embodiment of the invention until—

MR. TOULMIN: —You can see the set screws are not in the patent.

MR. WILLHAUCK: I can relieve that screw and take it out. That spring in there is still too hard to move that lever.

MR. TOULMIN: Not with power on it isn't. You can't do anything with your fingers.

MR. WILLHAUCK: Yes, but the machine is still free to move it back with the set screw in.

Testimony of Augustus D. Willhauck (Resumed).^o

MR. LYMAN: But with the set screw in you can move it.

MR. TOULMIN: Not with those set screws.

THE COURT: As I see it, with the set screw in there it limits the motion.

MR. WILLHAUCK: It is limited before we throw those springs.

MR. TOULMIN: But the claim is not directed—

THE COURT: —It says "free movement."

MR. TOULMIN: Not the bodily movement, but about that pivotal movement.

MR. LYMAN: I think, Your Honor, you understand the situation, but we can't be sure of the Court of Appeals. Of course, it is vital for us to show the court, if there is any question about this machine Model D being a McFeely machine. We want these exhibits in evidence in order that the court can pass upon that question.

THE COURT: Let us hear from Mr. Toulmin again and see if we can have an understanding which will limit the use of these. Will that meet the situation?

MR. LYMAN: Oh, yes.

THE COURT: Will that meet the situation, if we limit the use for which they are being received?

MR. LYMAN: Yes, just to illustrate the Model D construction, that is all. That is the only thing they are.

MR. TOULMIN: It will not meet my objection, Your Honor.

MR. LYMAN: You can't have any objection—

MR. TOULMIN: —Just let me finish, please, because the points I have recited before in objecting to this go to those vital features, elements of the claims in issue.

Let me say to Your Honor just one thing, please. The issue you have got to determine is whether the constructions set forth in the claims of their patents have been appropriated in defendant's machine. That is the only issue. You are not to compare some embodiment that these gentlemen may sincerely think is in their patent with our machine, because the courts have held you can't do that, because that would be dangerous. All you can do is to take their document, which represents their McFeely, and compare that with what the defendant has done.

Now I object to this machine for this good reason—I am referring to Exhibit 8-A. Their Hoyt patent in Figure 2 doesn't show those set screws. Those set

Testimony of Augustus D. Willhauck (Resumed).

screws are not there, because the claim of that patent, Claim 21, says as one of its elements "devices comprising arms loosely mounted on the supporting means." When you place the set screws in position so as to prevent their movement they are no longer loosely mounted upon the pivot point, because they can't move. The Moenus Company, from whom we got the machines, has those set screws in the machine and they are used for the purpose of adjusting. They add these screws to this model in order to try to make their patent closer to us, knowing that their patent is defective and does not have set screws and doesn't have the same movement that we have, and this is an attempt to lift themselves by their legal bootstraps. Now, so much for that construction there.

So far as I can tell from this model here (indicating), the large spring that should be in this model, which gives the resiliency necessary at the ends here to prevent the thing from wrecking itself when the pressure comes on, that large spring is not in there. I have not opened this up but as far as I can tell it is not there, and the resiliency seems to be wholly in that heel band. That large spring in the McFeely patent, as well as in Hoyt, is shown in Hoyt at 195, it is shown in the McFeely—

THE COURT:—There is no question it is in the machine we saw outside?

MR. TOULMIN: It would have to have it or it would not operate.

THE COURT: I mean for practical purposes.

MR. TOULMIN: Let me tell you the significance of that. The claim that involves that spring—there is one claim or two claims that say that these connections through here must be without a spring. That is just a rough way of putting it. This does have in the original construction a yielding connection. McFeely has springs in there. The McFeely patent—

MR. LYMAN: —Don't bother yourself. There is a spring there. And please remember, Your Honor, that nobody is presenting these as models of the patent in suit.

MR. TOULMIN: Then we shouldn't have them in there.

THE COURT: Do you agree there is a spring in there?

MR. TOULMIN: If I can take it out and look at it.

MR. LYMAN: Take it out and look at it.

MR. TOULMIN: Give me a wrench.

Testimony of Augustus D. Willhauck (Resumed).

MR. LYMAN: Please bear in mind that we are not asserting these are copies of the patent in suit.

THE COURT: I understand they are for illustrative purposes only.

MR. TOULMIN: If it is for illustration, and it is known to Your Honor what the differences are, we have no objection to them for illustration, to see what the parts are, but I don't want to leave it with Your Honor without an understanding of the differences, or have parts put in here that are controlling on the matter of infringement.

THE COURT: I understand there is a specific claim that this portion is loose in the patent. Here (indicating Exhibit 8-A) it isn't loose; it is held. You claim your machine is built like this but that the Hoyt patent does not cover this, but this is supposed to be loose in the Hoyt patent.

MR. TOULMIN: That is correct. And let me go one point further. In the McFeely patent it has springs out here on the end, out here (indicating), as you will see from this Figure 4 of the McFeely patent. As I understand it, this is a rigid connection, without any springs in it.

THE COURT: That is the feature of the Hoyt patent, isn't it?

MR. TOULMIN: That is correct, but if this is to represent McFeely then it is not correct.

THE COURT: 19 and 21, this is a rigid construction here and this loose connection that you are objecting to, the patent provides for, this loosely—

MR. TOULMIN: —“comprising arms loosely mounted on the supporting means.”

THE COURT: This isn't loosely mounted.

MR. TOULMIN: If that is understood, I have no objection to Your Honor looking at it and seeing it all you wish.

THE COURT: Of course, it is just a question of interpretation then. The witness claims here that this adjustment makes it unnecessary to push that heel band back further; is that right?

MR. WILLHAUCK: Yes, Your Honor. You see, before, you allow that to come away ahead and, as I say, de-compress those springs and have no tension on them, that would be loosely mounted, in other words, even from that position, because they can flop back here to where this plunger was.

THE COURT: Is it your position the function is no different than the original Hoyt patent?

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MR. WILLHAUCK: No difference that I can see.

THE COURT: If we understand, subject to the inspection of the springs there, that removes one objection, and then the fact you claim this is rigidly mounted instead of loosely mounted, as provided by the patent, this may go in.

MR. TOULMIN: For illustrative purposes, for assistance to you, but with the further understanding we are firm in our position you have to compare our machine with the patent.

THE COURT: It will be received subject to that, just for the benefit of the Court of Appeals.

MR. TOULMIN: I haven't had a chance to look at this (indicating).

THE COURT: These will be all subject to your inspection.

MR. TOULMIN: And it is subject to my same objection as to the tackers and wipers, which I would like to show the court right now, if I may, why I object to this. If you will look at the McFeely patent in suit, Figure 7, you are looking at the side of one of those tackers and the wiper is in section, and this is the means for moving. In the McFeely patent there are three movements. You first make a preliminary wipe in and the tacker travels over; second, you make an intermediate wipe in and the tacker moves with it; and, third, due to this spring and connection with the slot, the wiper only goes part-way, the tacker goes on beyond it and tacks on the inside of the wiper.

THE COURT: No, as I understand it, the tacking device is always ahead of the wiper.

MR. LYMAN: That is right.

MR. TOULMIN: It is always ahead of it but nevertheless the wiper is held back on the third movement, and the patent says so on page 7 of the patent. In this model Exhibit 8-B there is no relative movement and no mechanism to permit that relative movement, and it does not follow the original McFeely patent.

THE COURT: Let us see if we get this right. Here the tacking apparatus and the wiper are together. They are almost joined. In the original, the tacking arrangement is always ahead of the wiper.

MR. TOULMIN: In the second McFeely.

THE COURT: In the one in the patent in suit there are three movements. The third movement is when the wiper holds it in place and the tacks are driven, but the tacking arrangement moves with the wiping arrange-

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ment all the way through. It is differently mounted on the later machines because it is driven in the holes.

MR. TOULMIN: No, that is not correct, Your Honor, if you don't mind.

THE COURT: We don't want to misunderstand that.

MR. TOULMIN: I am not trying to be contentious about this but I want to get it right. This goes to one of the claims and is vital. This pin in the slot is to permit relative movement. If you will just mark on your copy, page 6, lines 91 to 108, and page 11, line 116, you will see this described in the patent. I will mark them and then read it. You will have to study it, of course, to be sure it is right.

THE COURT: The tacking feature is mounted differently on the later model than the McFeely model.

MR. TOULMIN: That is correct.

THE COURT: But the tacker and the wiper move automatically the same, but the only thing is, on the later model the tacking comes through these holes, which are similar to your machine.

MR. TOULMIN: That is correct.

THE COURT: But they are not making any claim because the tacks are driven through the holes, but the claim is made because the tacking and the wiping arrangement is automatic, they move together.

MR. TOULMIN: And I say in the McFeely patent it is so mounted that there is a loose connection, as they call it in their claim, permitting relative limited movement between the tacker and the wiper to permit of tacking on the inside of the wiper instead of through it.

THE COURT: I know.

MR. TOULMIN: That is in one claim.

THE COURT: That is for the purpose of adjustment only.

MR. TOULMIN: No, Your Honor, that is not for the purpose of adjustment. It is for the purpose of the fundamental operation of the McFeely patent in suit, and the claim so specifies it. That is claim 6, if Your Honor will mark it, and I will show you where to underscore the part that we don't have. Claim 6, the last element of the claim, "tacking units cooperating with the wiper plates and having means"—that is a separate means—"to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates." When you read this specification you will find that refers back to the figure that I had here a minute ago that shows that relative movement, and the ma-

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chine won't operate unless it operates that way, and I say, therefore, it is unfair to this defendant to have a model which has been made like it instead of made like the patent in suit. We are willing to stand or fall on the patent in suit compared with our machine; we are not willing to stand or fall on a model made like this to determine a claim of that breadth.

THE COURT: There is no understanding on my part that in the McFeely patent in suit and the machine the tacking is not done through these holes but the tacking arrangement is just ahead of the wiper always, but the wiping mechanism is practically the same, is the same in both machines, the only difference here on this model, as I see it, being that the wiping and tacking arrangement—they are practically combined.

MR. TOULMIN: They are rigid in this case and in the other they move relative to each other. If you understand that, I am satisfied.

THE COURT: I do understand that. There is no mistake on that score.

MR. TOULMIN: If you look at Model A you can see exactly what I mean.

MR. LYMAN: We don't want to argue the case now.

THE COURT: As far as I am concerned, as I say, this is merely for illustrative purposes.

MR. TOULMIN: Where is the spring?

MR. LYMAN: We will ask the witness when he gets to describing it.

MR. TOULMIN: You said you had a spring here.

THE COURT: That is subject to inspection, as far as the spring is concerned. They say it is there. That is subject to inspection. If you say, with the understanding it is purely for illustrative purposes, that is all it means, I understand the difference.

MR. TOULMIN: And so long as you understand that the McFeely patent in suit has that relative movement and will take that into consideration as our position, then if this can be of any help to Your Honor I am delighted to have it in.

THE COURT: That is the only thing.

The illustrative model referring to heel band mechanism in the Model D machine (Exhibit 7) is made part of this record as **Plaintiff's Exhibit No. 8-A.**

The illustrative model referring to the wiper-tacker mechanism in the Model D machine (Exhibit 7) is

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made part of this record as **Plaintiff's Exhibit No. 8-B.**

Thereupon the court returned to the bench and the direct examination of Mr. Willhauck proceeded as follows:

By Mr. Hammett:

Q58- The question asked of the witness was, what are these exhibits which are marked 8-A and 8-B. Please answer that question. A. The exhibit marked 8-A is to show the band and the mechanism operating on that band to apply pressure, and the adjustment of the band forward and back in the machine.

Q59 In what machine? A. The Model D machine.

Q60 What is 8-B for identification? A. 8-B represents the wiping and tacking units and the means of adjusting and operating them in the Model D machine.

Q61 Now that we have these models uncovered and separated I wish you would please explain the operation of the parts shown in Exhibit 8-A for identification. A. Exhibit 8-A, of course we can't produce and put a cam on this. We simply substituted for the cam a hand lever. We have the actual parts from a Model D machine, commercial machine, which is here. For the purpose of the inspection, instead of mounting it underneath a plate on top we have simply put the support on the bottom. This cam here is simply as a means of holding that stud in proper position, where it would have a head of the machine to keep it in its position when it is in the place in the machine where it belongs. We have the racks which operate upon segment levers which go forward and exert pressure on this member here on the front edge, or end, rather, of this band. It is the same on this side here. We show here a means for applying pressure on that band, what I call corners or ears. We show the clips which afford that path on either side, and we show the means of adjusting that pad.

Q62 Referring to this means of applying pressure at the corner of the pad, please explain how those arms are mounted. A. Those arms are mounted upon this solid carrier right here. The fit around that stud is such that the levers are free to pivot. Of course, to get a pressure in here at the corner we must have tension on these screws. Now, those are individually mounted and we can get a minimum pressure or a medium pressure or a maximum pressure at that particular area by the

Testimony of Augustus D. Willhauck (Resumed).

amount that those screws screw into the hole to move them out, that is, compressing or lengthening the spring.

Q63 Where is that spring? Will you point that out to the court? A. That spring is in this member (indicating) and in the plunger.

Q64 In other words, there is a spring between this plunger and this screw? A. On each side.

Q65 Will this presser member—and I am pointing to the presser member at the corner of the band—yield by compressing that spring? A. It will.

Q66 And when it does so, these arms will move about this pivot at the end of the band, will they not? A. They will.

Q67 Will you show the court how you adjust the heel band? A. Your heel band is adjusted by means of this lever here, which runs through the machine and has a pinion on the end of it which meshes with the teeth in the rack that goes back into the bearing. By a motion of this lever rearwardly you slide that pad back into the machine; forwardly it will bring the pad forward. It slides in its supports to the front, and it does not change its size. That is the distance, of course, here at the open end. You can hardly see that, but that actually takes place.

Q68 When you slide that do the presser members move, the presser members at the front end? A. No, the presser members at the front end don't move. The pad moves in relation to your presser members.

Q69 Going back again to these two arms which apply pressure at the corner of the band and to the set screws which are interposed between those arms and the back stop, you said those arms yield. Is that true regardless of the presence or absence of those set screws? A. Yes.

Q70 What is the effect of the set screws there? A. The effect of the set screw is simply this. These springs in here are operating upon these levers. Those levers are right close to the pad. This spring is put in a pressure against the curvature of that pad, getting a resulting pressure in this direction (indicating). The other one is doing the same thing. Those two combined give you a resilient force that is going to force that pad forward out of the machine. Now, in working on a woman's shoe there is no need of getting down to a pad the size of a miss's or an infant's shoe. As I show by moving those set screws, those arms will move in. It is just simply the means of taking a position on the shoe that you are

Testimony of Augustus D. Willhauck (Resumed).

operating upon that the operator, or even the machine, does not have to do a lot of useless work in hauling it back into the position it is supposed to be in.

Q71 If I understand what you have just said, these set screws limit the extent of the yield. A. Forward.

Q72 There has been some talk about whether or not there was a spring interposed in these driving connections. Is there any spring in these driving connections? And I refer to the hand levers. A. There is a spring. If there were not a spring in there you wouldn't get any motion of your pressure members. You have got to have it in.

Q73 I think we can now turn to model Exhibit 8-B, unless you have anything further to say about 8-A which I have overlooked. You might operate the lever and show His Honor how that operates the heel band. A. Of course, I can't hold the shoe in the position—

THE COURT: —We went over that whole thing. A. (Operating device): It simply applies that pressure.

Q74 You will note that slides. 8-B, please, what does that represent? A: 8-B represents your wiping and tacking units and means of adjusting them in a Model D heel seat laster. We have back here a handle to take the place of a cam; we haven't the actual cam on. We have the cam mounting, we have the adjustment for adjusting the wipers so you can take advantage of a predetermined distance of movement built into the cam and still cover a full range of shoes.

Q75 Please show that adjusting means to which you just referred. A. This is the adjusting means right here (indicating).

MR. HAMMETT: Witness points to hand wheel at side of Model 8-B.

A. To operate that adjustment the machine must be—that is just what I did, just simply put it in its straight position. You will notice there is a spring on this handle which keeps it out of engagement with that beveled gear. That beveled gear is mounted in this main slide. When I depress or push inwardly on that handle and engage the tongue on the end of this shaft in here with a cut in the beveled gear and turn it, this gear here is rotated. That gear is fastened. It has on it (removing part) this block. That block is supported in here between these two pressure bearings. That is all they do, is to take the thrust of this screw. This rack has these two ears upon it. They extend downwardly

Testimony of Augustus D. Willhauck. (Resumed).

into that nut. It is a nut; irrespective of the shape, it is a nut. Now you can see, as I push that in and turn it, this travel back and forth upon a fixed screw (demonstrating). - Now, this turning locks—I may have changed the position, but I shall put that back on—makes your connection between these slides on either side, in turn engaging a pinion which has a rack on it—not a rack on the pinion; it has the rack attached to this slide here on either side. As I turn that you will notice that those members move backwardly or wider or smaller. Now, that moves these members, which are fastened to the block and are fastened to the cam. They move them inwardly or outwardly. That is for the hand adjustment. That all is done from this wheel.

One thing I must explain is the reason for this spring. The reason for this spring is this. If that is left in, in engagement, the machine is started and the shaft moves, you are going to break the end of that shaft. That is only to keep it in safe position.

These adjustments here—

MR. HAMMETT: Pointing to knurled head screws at sides of 8-B.

A. —would increase the range or capacity of this particular unit. In other words, if we leave these cam plates or connections, which they are, to the end of the wiper, in one position, we can go from an extremely large heel seat down to a fairly small one. With a dress shoe, especially in a woman's shoe, you are going to get a very small heel seat across the breast or around the shank, necessitating a little more inward movement. We can't get it because we have already built a predetermined motion into the cam, so we just adjust these members here, move the initial position forward to compensate for it, and proceed as we did before.

One thing I might explain is this. The only function of this particular portion of this unit is to lock it in shipment so it is not jammed back and forth. There is no function in the machine whatsoever.

By Mr. Hammett:

Q76 Mr. Toulmin wants to see that spring. We will take it apart later. A. Yes.

Q77 Will you resume the stand, please, Mr. Willhauck? (After witness returned to the witness stand): You pointed out that the wipers in this assembly are adjustable. Why are they made adjustable? A. The wipers are made adjustable for the reason that you have

Testimony of Augustus D. Willhauck (Resumed).

a certain motion built into your cam. Now, if that motion is sufficient, the throws are sufficient, and your leverage and so forth, you can operate and operate efficiently upon one particular size of shoe. Your wipers also have a definite shape. That shape is that unit, those wipers. You can't build a wiper that is going to fit everything, so we build it to fit a medium shoe and take into consideration the approach of that wiper to the heel seat. Those adjustments of the wiper govern the approach—the shape plus the adjustments govern the approach of the wiper in relation to your throw. They also allow you to tack a full range of sizes on the shoes, going from the smallest to the biggest. They also will help you in case your lasting margin is a little less than the counter, or such condition as that, to get your tacks in so you can absolutely control all the material you have wiped over by these wipers.

MR. LYMAN: Your Honor understands what is meant by "lasting margin" I presume.

THE COURT: Yes; we went through that.

-Q78 In Exhibit 8-B do the tackers and wipers move together when the wipers are adjusted? A. They do.

Q79 Do they also move together in the power movement of the wipers? A. They do.

Q80 What is the advantage of that? A. The advantage of that is this. We want to get those tacks into that lasting margin as close to the inner edge of the members that we are trying to fasten down, as close as possible. We build into that unit the proper relationship between the tack and the edge of the wiper. Our adjustment takes care of our sizes. Therefore, when the operator makes one simple adjustment to take care of the size, automatically he has taken care of the position of his tacks too. In other words, if the operator had to make a special adjustment in relation to the wiper, that is, move the tackers independently, he would have very slow work and another chance of error.

THE COURT: In other words, when you adjust the wipers you at the same time adjust the tacker. A. Absolutely.

Q81 Why is the heelband made adjustable lengthwise of the shoe as I am now illustrating on Model 8-A? A. That heelband is made adjustable in that manner to take care of the position of the shoe that we are going to heel seat last in relation to that tacking and wiping unit, the first one. In other words, you may want to

• Testimony of Augustus D. Willhauck (Resumed). •

drop it a little further back to get your tacks in closer around here (indicating on Exhibit 5-G). That will take care of that condition there. Now in that wiper, of course, we also have this condition, that the distance from here to here (indicating) is longer.

THE COURT: That is, from the—

A. —Back of the heel right at this particular point (indicating on Exhibit 5-G) down to what we call the breast line, on a large shoe is longer than it is on a smaller shoe. There are cases where we do like to get those tacks up as far as possible because your counter is longer correspondingly in those same shoes. Now you can, by absorbing a little of this margin here, moving a little further ahead, place these tacks further ahead. That is bound to follow because it moves the whole shoe forward. Vice versa, if we get a small shoe we don't want to put these tacks so far up and we can move that forwardly, take a little of this distance here, not enough to damage the heel seat lasting, and move them a little closer back. We get that advantage. Another advantage is this, that when we apply this pressure on these members on the forward part of that mechanism to close the open end of the pad—

Q82: —When you say "pad" do you mean heel band?

A. Pad or band—we want to get that pressure in that manner (indicating), directly opposed and across at right angles to the last. The reason is that counter extends away up and we must bring that line in just as much as we bring it around here to form the width of the last. We can do that and we can keep that pressure constant and about the same particular relation to a large heel as a small one, by moving that pad back and forth as that adjustment moves the shoe in relation to the pressure. It doesn't move the pressure and the pad can't slide back and forth.

Q83: Let us make a little clearer what you were just explaining. When I move this pad back and forth you pointed out that these pressure members at the open end of the band and these supporting clips at the open end of the band do not move with the band (demonstrating on model). Now what is the advantage of the construction in which the band moves relative to those members? A. The advantage of having it move relative is the fact that if you move that band forwardly and have it set to a certain size you can move it in these members and you do not change the position across there (indicating).

Testimony of Augustus D. Willhauck (Resumed).

Q84 Witness indicates across open end of band.
A. I can't operate against those.

THE COURT: I understand.

A. You see that is back in there and I want to get the pressure out in here.

Q85 Witness indicates front end of band. A. I can make this adjustment here and move it rearwardly. You will notice this pressure here has not been disturbed, only its direction disturbed.

MR. HAMMETT: Witness indicates front presser.

THE COURT: Will this help the situation, that you make that one band do the work of two by your lengthening it?

A. Yes. In other words, not only the band but the mechanism.

THE COURT: The mechanism, I mean, by the forward and back movement it is unnecessary to readjust the side movement and let you get deeper into the band without readjusting the side movement? A. Yes, Your Honor.

THE COURT: That is the prime purpose.

MR. HAMMETT: I want to point out, Your Honor, that it is not merely the backward and forward movement of the band that accomplishes that, but when the band moves these things don't move. The mere movement of the band, of course, is not new.

By Mr. Hammett:

Q86 I believe you have already pointed out, if I correctly understood you, the influence of the pressure exerted at the front end of the band and the fact that the band slides relative to the front end pressure members. A. That is right.

Q87 What did you say the result was? A. The result was that you kept the pressure directly across and opposed to one another at the breast line of the heel, and you do not change the intensity of that pressure.

Q88 In other words, the angle at which the pressure is applied— A. —Is constant.

Q89 Now if those presser members move about a pivot, let us say, instead of remaining stationary when the band is moved, what would be the result on the band if they were attached to the band and moved with it?

A. If those members were attached to your band and only allowed to pivot, the limitations upon your adjustment would be so small it is practically useless. You would have also a tendency in distorting your band in trying to come forward. If you try to go back you pull

Testimony of Augustus D. Willhauck (Resumed).

this member trying to exert pressure on your pad, and in pulling it back, that would be the extent it would go; that is all that would go back, because you are trying to make all the pressure with this little handle here. In other words, that is fastened at that particular point. When you try to pull it back, something would have to go.

Q90 Suppose the pressure members were pivoted about the pivot, and suppose they swing back to the band about that pivot. A. You could do that but you are going to change the angle of applied pressure.

THE COURT: What would happen if you did not have that feature?

A. I don't understand.

THE COURT: Suppose you eliminated all of that; what would happen? A. Eliminated all of this (indicating)?

THE COURT: No, the slide movement you are talking about.

A. I think if you eliminated this adjustment of this pad you wouldn't be able to operate efficiently on the shoes the way they would come to the machine, as regards this and as regards your lasting margins. You have to build so accurately to get these things in their proper relations and the shoe would have to be so accurate if they were fixed, you can't get those conditions.

THE COURT: You would have to readjust the size and everything else to fit each different last?

A. You would have to have a complete readjustment.

THE COURT: Is that the claim you make, that that overcomes that necessity?

A. It simplifies the number of the parts you must have and also controls, as I say, and gives us the advantage of all of this other stuff.

MR. HAMMETT: That is the sliding of the bands in these members, not the mere movement of the band itself.

At this point a short recess was taken, after which Mr. Willhauck returned to the witness stand and testified further, as follows:

By Mr. Hammett:

Q91 In order to clear up one little point His Honor asked you, as I understood him, just before the recess, if the fact that you have this adjustment of the heel band in the machine relieves the operator of the necessity of a good deal of adjusting and fiddling with the wiper plates; is that correct? A. It does, because we

Testimony of Augustus D. Willhauck (Resumed).

don't adjust the pad. The operator will have to adjust the whole wiper mechanism.

Q92 About these springs about which there has been so much discussion, behind the presser arms at the corners of the heel band, are the springs which are in this model regular commercial springs, the same as appear in the Model D machines? A. They are regular commercial springs.

MR. TOULMIN: I want to say, Your Honor, it was not those springs I was raising the issue about. I don't want to confuse you.

MR. LYMAN: This is the spring (indicating).

THE COURT: The center spring.

Q93 I now point to the center spring here, which runs from the operating handle forward. A. Those are commercial parts.

MR. LYMAN: May I ask Mr. Toulmin if he wants this model taken apart, so he can see there is a spring there?

MR. TOULMIN: I would like to see that later. There is no use to stop now.

MR. LYMAN: All right.

Q94 With regard to these adjustment stops on the corner presser arms which, as you have explained, limit the forward yielding movement of the corner pressure members, do those stops appear in the commercial machines? A. They do.

Q95 How long have they been in the commercial machines? A. I should judge they have been in there since about 1930.

Q96 Would you properly term these set screws? A. No, I would not. Those are adjustments.

Q97 Their effect is merely to limit the extent of that yielding movement? A. Forward thrust.

Q98 Are the wiper plates on these machines adapted for McKay or welt work? A. You could get a wiper that is applicable to McKay work; you could also get a wiper that is applicable to welt work. The only difference is, if I may point it out, the wipers in the forward end here of Exhibit 8-B are shaped a little differently, so that it does not interfere with the upstanding rib on a welt shoe.

Q99 Does the United Shoe supply both wiper plates? A. So far as I know, yes.

Q100 There has been some talk about the fact that the pressure that you put into the open end of the band is applied unyieldingly in this Exhibit 8-A. What is the

Testimony of Augustus D. Willhauck (Resumed).

advantage of applying pressure to the forward end of the band unyieldingly? A: When a man puts a shoe into that pad he must—I will use this Exhibit 5-G to explain what I mean—place that shoe in the pad and then determine by his eye that he has got the proper location that way (indicating). In other words, he can't have the shoe off this way (indicating). Now, with an unyielding pressure, if he does get it off a little bit it is automatically going to try to center itself. That is one of the advantages of having the unyielding pressure. Another advantage is this. On the wiping action on that same shoe you may have the shoe drawn into the band by the drawing in lever, as explained this morning, and locked in that position. The wiper exerts considerable force in this direction as it hits. If that band is closed tightly around there it has a tendency to hug into that little curvature, that is helping the mechanical parts of the machine to resist that forward displacement of the shoe. Also, it gets in there and gives a better fit and will give the benefit of any tendency to rock that way. It is supposed to be the same but you may have conditions where they are not the same; therefore, the wiper may work a little harder here than it does there. Finally it brings it down to fit. If you hit it a little harder here you might have a tendency to go there. If you have it firmly gripped here, here and here, the wiper can't displace the shoe.

Q101 Comparing that unyielding pressure with the yielding pressure, which would give the more equal pressure on the two sides of the shoe? A: The solid connected links would give you a more constant pressure.

Q102 I now direct your attention to the arms mounted about this pivot for applying pressure to the corners of the heel band in Exhibit 8-A, and I ask you what are the advantages of that construction as compared with the flat spring which we found in the Model A this morning. A: In this machine or construction of this mechanism you have there a chance to vary your pressures. In other words, by unscrewing those nuts I am pointing to on Exhibit 8-A you will open the length of that spring. In closing it up you will get it longer. In a flat spring construction the extent of pressure that you can apply in this particular area here has got to be built into the spring and it can't be varied unless you substitute another spring of another thickness and another curvature. This particular thing here, you

Testimony of Augustus D. Willhauck (Resumed).

can get those pressures, where if you tried to do that with the structure you have in Model A you would have to take it out and put a whole new spring in. If you wanted to get it greater or lesser, you would have to do that same thing.

Q103 Can you get different pressures on different seats for different sizes? A. You can adjust this, you can get more here and less here.

Q104 Which construction is most durable? A. This here.

Q105 Pointing to Exhibit 8-A. A. As shown by the Model D construction.

Q106 You pointed out this morning while we were examining the exhibits in the exhibit room that in the sequence of operations of both the Model A and the Model D there is initial downward movement of the hold-down or shoe gauge before there is any wiping action in the machine, that is, when the operator trips the clutch the hold-down depresses the last before the first wipe. What is the advantage of that initial downward movement? A. That initial downward movement you can obtain with it an upwipe because at the time that that shoe rest or hold-down is being depressed your band is being closed about the heel at the end of the last, and that has a tendency, as the last goes down through, to take any looseness—and I can show it on Exhibit 5-E—You will notice that there is looseness in here (indicating). Now we get the band around there, depress it, and we wipe that upwardly toward that face of your insole, giving the wipers a chance to go over it and compact it down over the counter and insole.

THE COURT: That was that operation we saw this morning over at Krippendorf's?

A. Yes, Your Honor, I believe so. I didn't see it.

THE COURT: Weren't you there?

A. No, Your Honor.

MR. LYMAN: Did you have something else to say, Your Honor?

THE COURT: No. I said that was the operation. Mr. Toulmin said he wanted that established, that there was really upwiping, and we went over it two or three times.

MR. TOULMIN: No, I said I could not see any upwiping and my associates said they could not see any upwiping. I also told you it was immaterial on the question of infringement as it developed this afternoon about the upwiping, so I think it was a moot question.

Testimony of Augustus D. Willhauck (Resumed).

MR. LYMAN: But Your Honor did notice—

THE COURT: I gave it about a thirty-second of an inch.

MR. TOULMIN: Yes I remember Your Honor said one thirty-second of an inch.

By Mr. Hammett:

Q107 Is there any advantage in this initial downward movement if the operator, for instance, in inserting the shoe under the jack, should pick up the band? What then? A. Yes, there is an advantage in that. If he picks up that band, come in and picks the band up and raises it up and takes out all that upward motion that was shown in those clamping members, he has raised that band to its limit and got the shoe up against the shoe rest. Now if he leaves that in that condition and tries to take advantage of his second wipe, which is further upwipe, he is going to have a tendency to push the shoe through the band and displacing its upper from the last and ruining it—not ruining it but getting a poor job of lasting. With the downward pressure he cannot take advantage of it because he can move the shoe and the band down. That is the advantage of being able to depress.

Q108 When you talk of moving the band up and down do you refer to this plate in the clips at the end, vertical plate? A. Yes, vertical plate.

Q109 You have spoken of the advantages of this downward movement per se. What are the advantages of having its extent adjustable? A. Well, if you have that downward motion adjustable you can increase the amount that you are going to depress the shoe through the pad, giving you a heavier overwipe.

Q110 Heavier what? A. Upwipe—pardon me, not overwipe—upwipe. You can adjust the varying thicknesses of counters, doublers and linings and uppers there. You also have in that adjustment a chance to vary the amount of upward motion that you are going to get on your second wipe by varying the amount of your depression. In other words, if you depress on the cam a movement will come back on you, but if you only depress one thirty-second the upwipe or upward motion between the first and second wipe will only be one thirty-second, due to the fact that adjustment was locked. You might want to do it in some cases; in some cases you don't want to take it all the way up.

Testimony of Augustus D. Willhauck (Resumed).

MR. LYMAN: I understand, if Your Honor please, these two exhibits, 8-A and 8-B, were admitted for the limited purpose stated.

THE COURT: That is right.

MR. TOULMIN: And we further understand the true comparison is to be made by Your Honor between the patents in suit and our machine.

THE COURT: That is right.

MR. HAMMETT: That is all with this witness.

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 As I understood you this morning in describing the operation of making a shoe according to the exhibits 5-A to 5-I, this shoe, so far as heel lasting is concerned, could be lasted upon a bed laster; is that correct? A. On a bedlaster—only hearsay—probably could. I am not familiar with heel lasters as regards your bed lasting machines.

XQ2 In the Model A, which I think is Exhibit 4 of the plaintiff, in the anteroom, it is made in accordance, as I understand your testimony, with the McFeely patent in suit; is that correct?

MR. HAMMETT: He did not testify to that.

MR. LYMAN: It is a fact but it will be testified to by some other witness. This witness does not know the McFeely patent. He has not testified anything about it.

MR. TOULMIN: I understood him to say, and I wanted to be sure about it, that the machine he was testifying to this morning as Exhibit A, about which we had a little dispute, was in accordance with the McFeely patent in suit.

MR. LYMAN: I said so, Your Honor. The witness is not competent to say so. In other words, we will have testimony to that effect. You can proceed on that assumption.

THE COURT: I think that might have arisen over some objection to the Model D machine that comprised the McFeely plus the Hoyt patents.

MR. TOULMIN: No, Your Honor. I don't mean to dispute you but I remembered quite clearly, I thought—I made a note to that effect—that this gentleman said that the Model A out there, Exhibit 4, was made like the first McFeely patent.

THE COURT: There was a lot of cross-questioning there. I am not sure. You may put the question whether he did or did not.

Testimony of Augustus D. Willhauck (Resumed).

MR. TOULMIN: He can answer whether he did.

THE COURT: Yes.

A. I don't believe I said it was the McFeely patent. I said it was a Model A and I recognized it as a Model A machine.

By Mr. Toulmin:

XQ3 And the second machine out there is what you call your Model D, is that correct? A. That is correct.

XQ4 Referring to the Model A machine in the other room, and referring to this Exhibit 8-A, it is essential, is it not, that there be some yielding connection, such as a spring, between the point of application of power, such as the handle or the arm on the cam, and the point of application of force so generated at the ends of the heel band? A. I would say yes.

XQ5 As a matter of fact, if there wasn't a yielding connection somewhere in that train of application of force, the machine would not operate, isn't that true? A. That machine would operate providing your motions were so arranged that you did not get beyond the point where you had to break something.

XQ6 Yes, but taking the machine Model A, Exhibit 4, or this model Exhibit 8-A, it is necessary to have a substantial spring or springs interposed between the application of power and the point where the power is applied on the ends of the heel bands; that is correct, isn't it? A. I would say yes.

XQ7 Referring to this model Exhibit 8-A, which is now before you, and I understand the same structure I am going to call attention to is in Model D, as I understand it there is a coiled spring in the housing that presses the plunger that presses upon the bight or applies force upon the bight of the heel band; is that right? A. That is a coiled spring, yes, sir.

XQ8 That is a coiled spring in this chamber that is closed by this threaded nut with a head on it? A. That is in the plunger and may be a little recess in that bight.

XQ9 Would you say that that is a desirable thing, to have a spring there, or an essential thing in the construction and operation of that piece of mechanism? A. I should say it is essential.

XQ10 Would you say if it was taken out that you would not have that construction as it is organized and operated upon as Exhibit 8-A? A. If you take those springs out I don't think it will operate properly.

Testimony of Augustus D. Willhauck (Resumed).

XQ11 Would you say it wouldn't work? A. It wouldn't last a heel seat properly.

XQ12 I understand that you say that these set screws on Model Exhibit 8-A mounted in little arms which are marked here as 533 and 532, according to the parts numbers, were put into the machine commercially about 1930? A. As near as I can judge. That may be an approximation but it was around that time.

THE COURT: Those are those—

MR. TOULMIN:—Two little arms, Your Honor.

THE COURT: That is in the claim 19?

MR. TOULMIN: 21, Your Honor.

THE COURT: That is the loosely mounted member.

MR. LYMAN: Is that what he is talking about, these little things that are called set screws or adjusting screws, adjustable stops? I think there may be some confusion.

MR. TOULMIN: There is no confusion. I am referring to the arms 533 and 532 of Exhibit 8-A, in which there are two set screws, one in each arm, that they were discussing in the other room.

By Mr. Toulmin:

XQ13 As I understand it from you, Mr. Witness, they were put in about 1930? A. Approximately, yes.

THE COURT: They are referred to in claim 21 of the Hoyt patent.

MR. TOULMIN: That is right, sir. I am getting right at that. I think I can boil this thing down somewhat.

THE COURT: All right.

By Mr. Toulmin:

X14 In Model A in the other room, Exhibit 4, will you be good enough to tell us again just how the wipers and tackers cooperate throughout the complete cycle of the movement of the wipers, giving us in pretty simple language the sequence of those movements? A. Your wipers and tackers in the Model A machine, when you adjust your wipers the tackers are adjusted with them. When your machine operates, the tackers move in conjunction with the wipers.

XQ15 I want you to give me, as you did this morning, so it will be perfectly clear about it, the exact sequence of movements, that is, to help you, how many times the wipers move across in their wiping operation and what the tackers do at that same time, so we will have

Testimony of Augustus D. Willhauck (Resumed).

a verbal picture of everything that happens in that machine as to the wiping. A. Just from the wiping point?

XQ16 Yes, that is right. Start from the beginning, in putting the shoe in place. A. First we put the shoe on the heel last pin. We have that rest on the arm extending on the front of the machine, which is to level the shoe in that direction (indicating); also a support for the last, with a tendency to rock right and left, that will allow you to level it up that way under the shoe rest. After you present that shoe and step on the right-hand treadle, the machine will start to move under power. The first thing that happens is the drawing in stroke, as I call it, which is the stroke that is going to draw your shoe and jack into the machine when power is applied. The next thing, your shoe rest is starting to press and the band is going to be closed about the heel, that is, it is in the process of closing, and it contacts it and the shoe is pushed down through it to the first wiper. There is a little lock there that drops into position through the operation of the band mechanism. Prior to that your wiper is retracted, that is, come off the shoe and backwardly, according to the construction of your cam track. Then your shoe is lifted, and the hold-down is lifted; due to the construction a little more pressure is going to be applied to the band to tighten it up, and your second wipe will take place. Your wipers retract and your tackers go back with them and move them, both on the first wipe with the tackers or the tackers with the wipers. They are retracted in the same manner.

XQ17 You are on the second wipe? A. I am explaining it. They do it on the first wipe. On the second wipe they do it the same way. They come over with the wipers and they retract with the wipers. On the other portion of that machine you have approximately a half-wipe, as we call it. Your wipers come in, your tackers come in with them, the machine comes to rest, the tacks are driven, the unit goes back, the wipers and tackers go back to their original starting position together, and the shoe is released from the band and the other mechanical means that are holding it in and the jack can be pulled out.

XQ18 You can be helpful to us if you will tell us what you mean on the third wipe by a half-wipe of the wipers.

THE COURT: That is on the third?

A. Two and a half wipes.

Testimony of Augustus D. Willhauck (Resumed).

MR. TOULMIN: That is on the third movement, Your Honor.

A. By a half-wipe I mean this. You wipe in, retract, wipe in—

By Mr. Toulmin:

XQ19 —That is two. A. And then you come in—as I say, we call it a half-wipe. It may be a little more than a half-wipe, you understand.

XQ20 But it is less than a full wipe? A. It is less than your full wipe, to get those tacks in ahead of the wipers and hold down the material that you have wiped.

MR. TOULMIN: That is what I was trying to explain to Your Honor in connection with Figure 7 of the McFeely patent in suit, and I would thank the court to mark this part of the specification which confirms the witness's statement as being correct. If you will look at page 11 of the specification, lines 85 on, in the right-hand column.

THE COURT: Yes, "coincidentally."

MR. TOULMIN: Yes, down to the bottom of the page and a couple of lines or so on the next page; possibly you need an extra paragraph to complete the cycle on the next page, down to line 20. If you will mark along there "see Figure 7" it will help you get it correctly.

By Mr. Toulmin:

XQ21 Now, Mr. Witness, I am going to refer, as a short way of doing it, to the Model A machine with the two and a half wipes, just as a name for it, that is, we have two full strokes then we have an approximate half-stroke of the wiper, then we do the tacking. Do you find that sort of movement in this Exhibit 8-B? A. You find two complete wipes in 8-B.

XQ22 Do you find the third half-wipe? A. You do not.

XQ23 Do you find the third half-wipe with the movement a little further of the tackers so they can tack beyond the wipers on the final operation? A. What was your question Mr. Toulmin? (After question was read): I don't believe your tacker is moved further than the half-wipe on your Model A machine.

XQ24 Let us put it this way, then, so that we will understand each other. You don't deny, do you, in this Exhibit 8-B that you do not have tacking beyond the wiper? A. We do not have tacking beyond the edge of the wiper on that model.

Testimony of Augustus D. Willhauck (Resumed).

XQ25 It is true in 8-B that in every movement of the wiper the tacker moves just as far as the wiper and the wiper moves just as far as the tacker? That is correct, isn't it? A. They do.

XQ26 Do you find the same movement of tackers and wipers in this model Exhibit 8-B and Model A with respect to the fact that in Model A you have two wipes and a half-wipe and then a tacking operation? Do you find that in this model? A. You do not have two and a half wipes in this model, but two full wipes and a tacking. In your Model A you have two and a half wipes, but irrespective of whether the wipe is a half or not the tacker units move with the wiper and they stay a predetermined distance ahead of the wiper. In this unit your tacks are driven a predetermined distance from the edge of the wiper and the edge of the wiper is a little in advance of the tackers.

XQ27 As I understand it, Exhibit Model 8-B is a partial fragmentary portion of similar mechanism in the complete machine Exhibit 7 in the other room; is that correct? Exhibit 7 is the Model D machine. A. I don't remember. Is Exhibit 7 the Model D?

THE COURT: That is the newer machine.

A. That is a representation of the wiping and tacking and operating and adjusting means.

XQ28 So we can take it that what has been said by you on cross-examination about 8-B would equally apply to Exhibit 7, without asking you complete questions about that machine; is that right? A. I believe so.

XQ29 As I understand it, you are a designer, aren't you? A. yes.

XQ30 I take it you read drawings. A. Yes.

XQ31 Shoe machinery drawings are your specialty, aren't they? A. Well, yes, you could put it that way.

XQ32 Would you mind looking at this drawing of Figure 2 in the Hoyt patent, 1,508,394, and with special reference to the arms 240 and 242, and tell me if you find in that drawing the two screws that appear in the same arms in Exhibit 8-A? A. (After examining patent): Those screws are not in those arms in this patent drawing.

XQ33 Now I hand you a patent, No. 1,852,015, to J. C. Jorgensen, of April 5, 1932, filed April 16, 1929, and assigned on its face to the United Shoe Machinery Corporation, and I will ask you to look at the drawings of that patent and as an engineer tell me whether or not those drawings correctly represent Exhibit 8-B and also

Testimony of Augustus D. Willhauck (Resumed).

Exhibit 7, the Model D machine in the other room. A. These patent drawings do not show all the refinements that are in this machine here (indicating Exhibit 8-B). It is undoubtedly the original attempt of your adjusting of your wipers and your operating through the connection of your wipers in the back and your adjustment of the wipers and tacking through the wipers.

XQ34 And it shows correctly, does it not, the arrangement—I call your attention to Figure 5, for instance, and Figure 2 and Figure 1—of the wipers and tackers as exemplified in Exhibit 8-B and the model D machine? A. (Witness examines patent).

MR. LYMAN: I don't know that the witness has ever seen this, Your Honor. I haven't either. It strikes me as quite immaterial.

MR. TOULMIN: It is a very vital thing.

MR. LYMAN: I don't see how it has the slightest materiality, but you are asking the witness in a hurry to answer whether certain patent drawings he has evidently never seen will answer an apparatus of this kind. It seems to me immaterial.

MR. TOULMIN: This is cross-examination.

THE COURT: Well, it is just a question if you are within the limits of cross-examination.

MR. TOULMIN: This witness has qualified as a machinery designer. He has produced this model. We want the witness to see it and tell us if this Exhibit 8-B and Exhibit 7 are built in accordance with a patent brought out years later than the patent in suit.

THE COURT: It is just a question of whether it is out of time or not.

MR. LYMAN: I object because it has nothing to do with the direct-examination.

THE COURT: You have a right to test his credibility if you want to do that, but it is purely a matter of defense.

MR. TOULMIN: It is not a matter of defense, Your Honor. If I brought this out through our own witness you could well say to me "why didn't you ask the man who produced these models, representing the United Shoe, who is their designer, if that model is embodied in Exhibit 8-B." We are giving him an opportunity to say whether it is or not. It has a vital bearing on this suit.

THE COURT: We are about three minutes from adjournment and it is a question of whether or not he would like to examine it. The only reason I raised that other point is it is just a question, as I see it, of keeping

Testimony of Augustus D. Willhauck (Resumed).

the record straight and in sequence. That is the only thing I have in mind.

MR. LYMAN: That is the reason for the rule not extending cross-examination beyond the subject-matter of the direct.

MR. TOULMIN: I want to make it clear that—

THE COURT: —As I say, the right of cross-examination of course is practically without limit. There is only one limit; that is, the defense cannot prove their case by cross-examination and it is just a question if it goes to that point or not.

MR. TOULMIN: It is not proving our case, Your Honor. It is impeaching their case.

THE COURT: I say you have a perfect right to impeach this witness if you are laying a foundation for that purpose.

MR. LYMAN: You say you are doing this to impeach the credibility of this witness?

MR. TOULMIN: No, not impeaching his credibility.

THE COURT: It is the same thing. If you want to lay a foundation for impeaching this witness by this method—

MR. LYMAN: —My brother did not say that.

THE COURT: I thought he did.

MR. LYMAN: Does he intend by this method to lay a foundation for impeaching the credibility of this witness?

MR. TOULMIN: If this witness denies that that construction of that patent is in this construction here, and your company denies it, I intend to prove that it is, and in that sense I will impeach him.

THE COURT: I say you are within your rights if you are laying a foundation to impeach this witness later. It is out of time if, as I say, you are attempting at this time to prove your case.

MR. TOULMIN: I am not trying to prove my case.

THE COURT: If you are doing it for the purpose of laying a foundation to impeach this witness then he may proceed, with the right to examine this between now and morning.

MR. TOULMIN: That is what I suggest we do.

At this point an adjournment was taken until ten o'clock in the morning of the following day, Wednesday, January 18, 1939.

Testimony of Augustus D. Willhauck (Resumed).

MORNING SESSION,

WEDNESDAY, JANUARY 18, 1939.

Court met pursuant to adjournment, counsel being present on behalf of both parties.

Thereupon,

Augustus D. Willhauck

resumed the stand and testified further, as follows:

MR. TOULMIN: Last evening, Your Honor, I was about to ask a question about the patent to Jorgensen, you will recall. I have only one copy. May I hand it up so Your Honor can look at it? (Handing copy of patent to the court): It is in connection with this apparatus over here (indicating Exhibit 8-B), which is the Model D. I will have some photostats made.

By Mr. Toulmin:

XQ35 (After XQ34 was read): Will you answer that question? A. These drawings show the intent and the purpose of the model, as I have said. As I have also said, there are certain refinements not shown on this drawing that are in the model.

MR. TOULMIN: We ask this patent be marked as Exhibit A.

Thereupon the printed copy of patent to Jorgensen, No. 1,852,015, April 5, 1932, was marked for the purpose of identification **Defendant's Exhibit A.**

MR. TOULMIN: I would like to offer this in evidence at this time, Your Honor, instead of just for identification, unless you have some custom to the contrary.

THE COURT: Well, I know, but the point about it is it would be out of time. I don't see any reason why it can't be marked for identification and offered in your part of the case.

MR. LYMAN: While we are about it, Your Honor, and in order that Your Honor may understand what the patent shows, may I just explain it to you?

THE COURT: Yes.

MR. LYMAN: The Jorgensen patent, Your Honor, is directed to the specific mechanism in relation to the tacking instrument which enables the tack hammer, which you will see is slanting, to contact the head of the nail, which is also slanting as it is about to enter the

Testimony of Augustus D. Willhauck (Resumed).

work in parallel lines. That is one feature that Jorgensen covers. Another is a provision of what the patent calls an upstanding flange on the wipers, which you will see in Figure 7 of the patent, which cooperates with the tacker elements to make some sort of a pocket that facilitates that particular delivery of the tack. A third provision are extensions on the wipers, which you see also in Figure 7, which are circular and concentric, one of which telescopes in the other and which aids in their motion.

THE COURT: Those are the three features.

MR. LYMAN: Those are the three things that that patent is directed to.

MR. TOULMIN: In this connection, Your Honor, I am relying upon that rule of law which I will not read to you because I have no cases here—I did not expect it to come up. It started in *Kokomo Fence Machine Co. v. Kitselman*, in the Supreme Court of the United States. There have been a whole series of cases, including our Court of Appeals, on the subject that where there is a patent of this sort embodied in the mechanism there is a presumption that there is a difference between the machines, that the machine of the second patent is presumptively different from the machine of the first patent. Our position here is this model here, Exhibit 8-B, and the Model D machine out there, embody these later improvements. They may have some few of the features of McFeely, but the commercial success and the differences are evidence of the fact that this picture of this mechanism here is contained literally in this Jorgensen patent. I don't want to argue that this morning, but want to tell you what the rule of law is, so you will not think—

MR. LYMAN: —Of course, a device involving more than one patent may involve one patent that covers the principle generally and another that covers improvement on the general principle, and the fact it has certain details that are patented by subsequent patents has no bearing one way or the other on showing—

THE COURT: —That is further along.

MR. LYMAN: Since Mr. Toulmin made that statement I wanted to tell you as we went along.

MR. TOULMIN: I think I can give you the best service by getting at the heart of these facts. If you will indulge me by going back to the exhibit room and taking the witness, I want to go over certain features of the machine so it will be perfectly clear to Your Honor. I

Testimony of Augustus D. Willhauck (Resumed).

have done it myself and it has been very helpful to me and I think it will be helpful to the court.

Thereupon the court, counsel and witness went to the anteroom where the exhibits were located, and the following proceedings were there had:

MR. TOULMIN: Now, Your Honor, before I ask the witness questions I want you to know at what the questions are directed, so you will have your attention directed to it. I want to show you in the Model A machine, before which you are now sitting with the witness, the relative movement between the wipers and the tackers and the number of wipes that are made, and also the fact that the tackers are exposed for tacking on the last, third, halfwipe, as referred to by the witness. But prior to that time they are covered up in the two previous full wipes, so there is relative movement between the tackers and the wipers that becomes essential in connection with such claims as claim 6.

By Mr. Toulmin:

Q36 Now, Mr. Witness, will you tell us, before we demonstrate this Model A to the court, your understanding of how these wipers and tackers operate? That is, just relate to us the sequence of movements both of the tackers and the wipers, and whether they move relative to each other or not. Please give us a word picture of it first.

MR. LYMAN: In the Model A machine.

A. In the Model A machine, in the power stroke of the machine your wipers move forward and inwardly over the shoe at this particular portion here (indicating). These tackers are set so that at the time we wish to drive the tacks they will drive the tacks a predetermined distance from the edge of these wipers. Now, as the machine turns over, of course this tackler and this tacker (indicating), the unit, follow the back edge of the wiper. That is in the corner. Your center one or end one is doing the same thing because on the same slide. Your end ones follow in because they are fastened to this block here (indicating).

XQ37 I don't want to interrupt, but what you mean, you are putting your finger on what are the wipers.

A. The wipers are here. On your second retraction your wiper moves rearwardly on the shoe to this point, then comes forward, and they follow through on the same motion. On approximately half-way—we term it half-way;

Testimony of Augustus D. Willhauck (Resumed).

not an accurate definition but we term it half-way—your wipers will advance and stop, the tackers are in their position in relation to the edge of the wipers, and the tack is then driven by the tackers.

XQ38 Isn't it true that on the first wipe the wipers completely cover the ends of the tackers? A. They may. I have never noticed that particularly.

XQ39 At this point will you please operate the machine by hand slowly through the first wipe? A. (Witness complies with request of counsel.)

THE COURT: Is that the point you made right there?

XQ40 Have you completed the movement for the first wipe? A. Yes, sir.

MR. LYMAN: The judge asked is that the point you made.

MR. TOULMIN: I will ask him the question.

THE COURT: Is that the point you made, at the completion of the first wipe that the wipers—The point is whether or not the tacking device is slightly exposed and still beyond the wiper.

MR. TOULMIN: That is right, but there is a second question.

MR. LYMAN: Let the witness answer the question.

By Mr. Toulmin:

XQ41 Point out to His Honor the second thing. And the second thing is that there is relative movement between the tacker and the wiper during that operation. Mr. Witness, you were about to make a remark about the condition there. A. To me it seems that the tackers—and these are the things that control the tackers—are ahead of the wiper, are not covered.

XQ42 Did you see relative movement between the wipers and the tackers in this first wiping operation? A. I saw the wipers had a tendency to come over a trifle, due to their curvature and the part they take; and the tackers, they eventually land in a position which is clear of the edge of the wipers.

XQ43 But they move relatively to each other, do they not? A. You could term it they moved one against another, but not what I understand in the term in relation one to another. They tend to move inwardly, which is over the shoe.

XQ44 Will you operate the first wipe once more? Get back to the initial position.

MR. LYMAN: Does the court see where the wipers are?

Testimony of Augustus D. Willhauck (Resumed).

THE COURT: Oh, yes; I see they are right in front.

XQ45 Now start with another first wiping operation, to see if the wipers move relatively to the tackers. A. (Witness operates machine).

MR. TOULMIN: Your Honor will see how these have moved this way, that is, toward you, and inwardly, to the inward position.

By Mr. Toulmin:

XQ46 Now will you continue the operation through the second wipe? (After witness complied with request of counsel): I would like the court to observe that the wipers again move relatively to the tackers.

MR. LYMAN: Ask the witness whether that is so, rather than your own statement.

By Mr. Toulmin:

XQ47 Mr. Witness, did you see the wipers on the second wipe move towards us and inwardly with relation to the tackers? A. I did.

XQ48 Now will you move the machine through the third wipe, the so-called half-wipe? (After witness had operated machine): What is that click, Mr. Witness? A. That was the release of the driver.

XQ49 That is the point of tacking? A. That is the point of tacking.

XQ50 Will you look and see if the wipers have progressed as far in the third so-called half-wipe as they did in the previous two wipes, with respect to the tackers? A. They have sideways but not forward.

MR. TOULMIN: That is all with the witness.

Thereupon the court resumed the bench and the witness returned to the witness stand and testified further, as follows:

REDIRECT EXAMINATION

By Mr. Hammett:

RDQ1 I would like to clear up one of the answers you gave us in cross-examination. Mr. Toulmin pointed on the model Plaintiff's Exhibit 8-A to the means for applying pressure to the corners of the band, and he pointed to two arms numbered 532 and 533; and he also pointed to the adjustable stops, screw threaded stops on those arms, and he asked you when those parts were first put into this machine, and I think you answered around 1930. To what did your answer refer? Did it refer to the

Testimony of Augustus D. Willhauck (Resumed).

arms themselves, without any stops, or did it refer to the screw threaded adjustable stops? A. I thought that I was only referring to the adjusting screws. The arms have always been in that place.

RDQ2 That is, to your recollection, as long as you knew, the arms themselves without any screws— A. —Have been there.

RDQ3 —Have always been there as they are now. I am not sure whether my notes are correct on this point. Did you say, or did you not, that in the Model A machine the end tacker comes forward when the wiper plates are adjusted in the preliminary sidewise adjustment. Do you understand my question? A. No, I don't.

RDQ4 In the Model A machine when the wipers are preliminarily adjusted that movement, Your Honor, is only a swinging movement, not a forward movement, and the witness said that the side wipers follow it in. Does the end wiper back here—

MR. LYMAN: —That means at the rear.

RDQ5 —At the rear or closed end of the band move at that time? A. No, they do not.

RDQ6 There has been so much question raised as to whether these arms, parts 532 and 533; on Plaintiff's Exhibit 8-A, are loosely mounted or not I wonder if it wouldn't be worthwhile to loosen those springs sufficiently so you could move that plunger and move those arms. I wonder if you could do that. A. I will try it.

MR. TOULMIN: I desire the record to show that the witness is working upon the model Exhibit 8-A. He is now going to change its set-up. As I understood, it was set up for an operation, so what the court will see will be an abnormal condition.

RDQ7 What are you doing now to this model? A. I am simply changing the amount of tension placed on this arm by the adjustment of that screw. The way it is at present, we would not be able to apply power enough to overcome that spring. Maybe we won't when I get it out.

RDQ8 What would be the case in the present adjustment of the spring before you touched that nut? How about moving those arms in the ordinary power operation of the machine? A. They would move rearwardly.

RDQ9 What you are doing is loosening that spring so that human strength will be adequate? A. Exactly, and I am doubtful at the end of this if I will have strength enough to make that pull back.

Testimony of Augustus D. Willhauck (Resumed).

MR. HAMMETT: (After witness had made adjustment): Your Honor sees the movement of that arm. Witness moves arm 532 back and forth on pivot.

MR. TOULMIN: Without the spring in the mechanism which it normally is supposed to have.

THE COURT: Just so there is no mistake about it, the point is that with the power attached it is your contention that it would be the same as what you are now trying to do manually?

MR. LYMAN: Yes, Your Honor; probably not to as great an extent as that, because you would not probably distort that spring that far.

THE COURT: Now are those bolts in the back we were talking about yesterday that you said came in in 1930, they are still in there?

MR. LYMAN: They are still in there.

THE COURT: And that is what the patent refers to when it says "loosely mounted".

MR. LYMAN: Yes. That I am doing now, moving these arms, loosely mounted arms, so they can move.

THE COURT: Plaintiff's position is notwithstanding those two set screws it is still loosely mounted.

MR. LYMAN: Yes, Your Honor.

MR. TOULMIN: Our position is that placing those set screws there, it is not loosely mounted.

MR. HAMMETT: It was not the arms that came in in 1930.

THE COURT: No; it was the set screws.

By Mr. Hammett:

RDQ12 Can you put that nut back?

MR. LYMAN: Don't interrupt the examination to do it.

MR. HAMMETT: That is all, Your Honor.

THE COURT: Any further questions?

MR. TOULMIN: Nothing further, Your Honor.

Thereupon Mr. Willhauck retired from the stand and

George W. Presby,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Lyman:

Q1 What is your name? A. George W. Presby.

Q2 Your age? A. Sixty-three.

Testimony of George W. Presby.

Q3 Your residence? A. 413 Lebanon Street, Melrose, Massachusetts.

Q4. You are employed by the United Shoe Machinery Corporation, plaintiff in this case? A. I am.

Q5 As a part of your responsibility and duty you keep charge of books showing the number of United Shoe Machinery Company machines which are out on lease or on shipment; is that correct? A. Yes, sir.

MR. TOULMIN: We object, Your Honor. If you are going into the question of commercial proof and commercial success, that is purely a rebuttal proposition and has nothing to do with the prima facie case. We are here on the third day and have not yet had the patent in suit explained by some witness compared with our machine, which is what plaintiff has to offer.

THE COURT: Isn't that a necessary element in their case?

MR. TOULMIN: No, your Honor. The courts have frequently held that any commercial success you have comes in rebuttal of their case, if they so need rebuttal of our contention, because commercial success is for the purpose of showing there is invention in those cases where there is a teeter-totter condition between it.

MR. LYMAN: I have had it held in various cases by the courts if you have anything to say about the history of your machine you should say it on the prima facie case, other courts say you can put it in at any time, but no courts in my experience have ever said it was improper on the prima facie case.

THE COURT: I think, strictly speaking, rebuttal calls only for evidence that will tend to explain the evidence offered by the defendant, and it would seem to me here that the commercial success is a necessary element in this case, and the ruling is that plaintiff may proceed at this time. You may have an exception.

MR. TOULMIN: It will be understood, Your Honor, that my objection goes to all questions on this subject, so I will not have to interrupt.

THE COURT: On the subject of commercial success.

By Mr. Lyman:

Q6 We are interested here in knowing how many of the United Shoe automatic heel seat laster machines, Types D and E, there are now in use in this country. Have you those figures obtained from your books? A. As of December 1, 1938, there were 941 Model D outstanding and 289 Model E out on lease as of that date.

Testimony of Charles T. Anderson.

MR. LYMAN: That is all.

MR. TOULMIN: That is all.

Thereupon Mr. Presby retired from the witness stand and

Charles T. Anderson,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Lyman:

Q1 Mr. Anderson, your full name, please? A. Charles T. Anderson.

Q2 Your age? A. Fifty-four.

Q3 And your residence? A. 876 Remington Road, Columbus, Ohio.

Q4 And your occupation? A. Assistant District Manager, United Shoe Machinery Corporation.

Q5 Where is your office? A. At 377 South High Street, Columbus, Ohio.

Q6 Do you know Mr. Graves Williams? A. I do.

Q7 Did you at one time see him to present a notice of infringement of the patents that are involved here? A. I did.

Q8 When was that? A. That was on January 28, 1936.

Q9 And where was it? A. In his office at Portsmouth, Ohio.

Q10 And what did you say to him? A. I told Graves that we had an opportunity to inspect the Moenus heel seat lasting machine in the factory in Milwaukee and that we found that this machine was an infringement on our patents and that we had sent a notice to the Albeko Company by our counsel, and at that moment I handed him a copy of the notice, along with the cut, the picture of the Moenus heel seat lasting machine.

MR. TOULMIN: If the Court please, I move the answer be stricken to that extent that it deals with the question of infringement of another machine not involved in here, and another potential defendant. It has no bearing upon the present case.

MR. LYMAN: This witness's testimony is going to the question of notice of infringement, Your Honor.

MR. TOULMIN: So far as getting notice to our company is concerned we not only admit that without dispute but we certainly don't want it to be involved with notice to somebody else.

Testimony of Charles T. Anderson.

MR. LYMAN: You admit notice of infringement by the witness?

MR. TOULMIN: We admit notice of infringement in the correspondence which we had with you after you made an inspection of our machine, which we gave voluntarily.

MR. LYMAN: You had notice of infringement at an earlier date.

MR. TOULMIN: If you confine it to that I have no objection. I still have a motion to that portion of his answer that went to infringement by others, as he alleged. It has nothing to do with this case.

THE COURT: Of course, it is just preliminary, and the purpose of this testimony is simply to show the date of notice of the infringement. Is that correct?

MR. LYMAN: That is correct.

By Mr. Lyman:

Q11 (After last question and answer were read): Is this document which I hand you a copy of the notice which you sent, which you handed me? A. (After examining document): Yes, sir.

Counsel for plaintiff thereupon offered in evidence the document so identified by the witness, being carbon copy of a letter dated December 17, 1935, to Albeko Shoe Machinery Corporation, 710 Broadway, New York, unsigned, and the same is made part of this record as **Plaintiff's Exhibit No. 9.**

Q12 Did you tell Mr. Williams that if he had those machines he was infringing the patents? A. I did.

Q13 Did he say whether or not he had those machines at that time? A. At that time he said he did not know whether he had the machines in his factory or not.

MR. LYMAN: That will be all.

MR. TOULMIN: That is all.

Thereupon Mr. Anderson retired from the witness stand.

MR. LYMAN: If Your Honor please, we have here, produced by the defendant, one of its machines. We are now about to turn to the question of the operation of the defendant's machines and the construction of those machines, and I think that this would be an appropriate time to have a look at that machine. We have the witnesses who have seen the machine at their plant, as Your

Discussion Between The Court and Counsel.

Honor knows, which we can put on, but if we could use this machine—

THE COURT:—You want to have it in the hall?

MR. LYMAN: Yes, the machine in the hall. It would be convenient at this time, I think, to see that machine operate and see what it has, and then let the witness describe it.

MR. TOULMIN: Will Your Honor let me say for the record here, and for your information and opposing counsel's when we got the machine in here we had thought at first that we had 220-volt-current in the hall. We find now we have only 110-volt, so we have put on a 110-volt motor with a speed change gear so we can run it at different speeds and see the motion. In order to last shoes it may be necessary to take it down to the basement, and I have a regular motor to put on if you wish to use it.

THE COURT: If that is necessary. I thought you would have your permission to get the 220 volt out of the panel.

MR. TOULMIN: We thought so at first. They say they don't have it on the panel.

THE COURT: We will do the best we can.

MR. TOULMIN: If it is necessary to do it we can move it down to the basement.

THE COURT: We can go through the motions without lasting shoes.

MR. TOULMIN: I have seen it go through the operation and it works all right.

MR. LYMAN: I think all that is necessary is to turn it over by hand, probably. I would also like to ask defendant's counsel if they have any drawings or photographs which will show the interior mechanism of that machine. By looking at it externally you can see what it is, you can see it has these adjusting means, and so on, but we also ought to have a showing of the interior construction, and I am asking counsel if they have any.

MR. TOULMIN: That is part of the task of plaintiff to produce his case. I produced the machine, the best evidence, voluntarily, and counsel will have to produce his case.

MR. LYMAN: Then it may be necessary, Your Honor, having seen the machine operate, to ask the defendant to dismantle enough of that machine so that we can see the constructions which are directly involved here.

MR. TOULMIN: We will be very happy to do that, and I have a mechanic here who is in charge of it.

Testimony of Jacob Jonas.

MR. LYMAN: Before we do that, Mr. Hammett has another witness who just arrived.

MR. HAMMETT: It won't take five minutes.

Thereupon,

Jacob Jonas,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Hammett:

Q1 What is your name, please? A. Jacob Jonas.

Q2 What is your residence, please, Mr. Jonas? A. Washington Avenue, Bellevue, Kentucky.

Q3 How old are you? A. Sixty-one.

Q4 What is your occupation? A. Superintendent of the Krippendorf-Dittman Shoe Company factory.

Q5 Where is the Krippendorf-Dittman factory located? A. Seventh and North Street.

Q6 What city? A. Cincinnati.

Q7 How long have you been in the shoe business? A. Since October, 1893.

Q8 How long have you been with Krippendorf? A. Since October, 1893.

Q9 It appears from the evidence in this case that one of the United Shoe Machinery Corporation's Model A automatic heel seat lasting machines was installed in the factory of the Krippendorf-Dittman Company. Do you remember when that machine was installed, or do you remember that it was installed? A. Why, it was installed I would say approximately about twenty years ago.

Q10 How long did it stay there, approximately? A. All during the period when they made turned shoes. I imagine that was about twelve years.

Q11 How did the machine work? A. Why, the machine was—

MR. TOULMIN: —We object. That is asking an opinion. He can give the facts of its production.

THE COURT: Yes.

Q12 State the facts. A. Why, the machine supplied the great need at that particular time, particularly for nailed seats on turned shoes.

MR. TOULMIN: We move that be stricken. That is not responsive to the question.

THE COURT: The motion will be granted. You may state what the machine did.

Testimony of Jacob Jonas.

Q13 You said the machine was there for about twelve years. During that time did you use it in your regular commercial production or not? A. Used it every day, every day we were working.

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 Mr. Jonas, do you have bed lasters in your plant? A. We do.

XQ2 How many? A. Oh, I would say about fifteen of them.

XQ3 How long have you had them, to your knowledge — just approximately? A. About Twenty-five years.

XQ4 Have they been satisfactory during that period? A. Oh, yes, for the work that they do.

XQ5 Still using them? A. Yes, still using them.

XQ6 Are you using them on heel lasting? A. Using them for heel lasting; we use them for welts.

XQ7 And on other shoes you use them on all kinds of shoes on toe lasting? A. On other shoes we only last the toes on them.

XQ8 Have you any adjustments on the wipers on those machines so you can adjust them to different sizes and types of shoes? A. The bed laster?

XQ9 Yes. A. We have different wipers for different types. In other words, for a welt shoe you would use a different type of wiper; for a wood heel lockstitch you would use another type.

XQ10 And any other type of wiper, can you adjust its position on the machine by a set screw or something? A. On the bed lasters?

XQ11 On the bed lasters. A. They can be adjusted.

XQ12 Do you have a heel band on those heel lasters? A. Sure you have a band.

XQ13 How is that band supported at the back? A. It is fastened to the frame with two pins that sets in there its adjustment, and it works on a principle something like a hinge.

XQ14 You mean it can be moved in and out, open or close its free ends? A. Open and close. It holds the shoe in position.

XQ15 Can you move the heel band adjusted lengthwise of the bed laster? A. Well, it moves with the carrier.

(Inspection of Machine.

MR. TOULMIN: That is all.

MR. HAMMETT: That is all, Your Honor.

Thereupon Mr. Jonas retired from the witness stand.

At this point the court and counsel inspected the machine produced by defendant, which machine was located in a corridor outside the court room. At the direction of counsel the proceedings at the machine were not made a part of the record. At the conclusion of the inspection the court and counsel returned to the court room and the trial proceeded as follows:

MR. TOULMIN: I would like to make one comment before we start with the next witness. I notice this Exhibit 9, which I did not observe when it was offered, is not addressed to the defendant but to the Albeko Shoe Machinery Corporation. I want the record to show that, and I therefore necessarily want to object to this being a notice to us because it was addressed to some other company.

THE COURT: What do you say about that?

MR. LYMAN: Your Honor bears in mind that the witness's testimony was that he spoke to Mr. Williams and said "If you are using these Moenus machines you are infringing. Here is a copy of our notice of infringement to Albeko." Albeko was the firm that was offering these things for sale.

THE COURT: It speaks for itself.

MR. TOULMIN: So long as the record is clear.

MR. LYMAN: Yes.

Thereupon,

Thomas J. Ryan,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Lyman:

Q1 Mr. Ryan, what is your name? A. Thomas J. Ryan; age, forty-three.

Q2 Where do you live? A. Residence, 32 Rose Avenue, Marblehead, Massachusetts.

Q3 And what is your occupation? A. Patent attorney.

Q4 You are with the United Shoe Machinery Corporation? A. Yes, sir.

Testimony of Thomas J. Ryan.

Q5 In the patent department of the United Shoe?
A. In the patent department.

Q6 You are the man who has been primarily responsible for the preparations for this trial? A. Yes.

Q7 And consultation with the attorneys about the case? A. Yes.

Q8 How long have you been employed by the United Shoe? A. About twenty-two years.

Q9 Before you went into the patent department what did you do? A. For about twelve years I was a draftsman, tool and machine designer.

Q10 Then you went into the patent department? A. Yes, in 1928.

Q11 In connection with your duties you have become familiar, I take it, with these heel seat lasting machines? A. Yes, sir, that is part of the art that I handled.

Q12 You have examined one of the defendant's Moe-nus machines in the hall adjacent the court room this morning? A. Yes, sir.

Q13 You also examined one of their machines in the fall of 1935 at the Williams plant? A. 1936.

Q14 1936, at the Williams plant, did you not? A. Yes, sir; December.

Q15 December— A. —December 19, 1936.

Q16 You went there with Mr. Condon, George Condon; did you? A. Yes, sir.

Q17 For the purpose of examining the alleged infringing machines? A. Yes.

Q18 That was pursuant to an arrangement made between counsel? A. Yes, sir.

Q19 And you were shown one machine, were you? A. I was shown one machine.

Q20 Where was that machine located? A. That machine had been removed from the lasting room, as I was informed.

Q21 Informed by the Williams people? A. By the Williams people and Mr. Toulmin. It was in a small room at the rear of the main office on the first floor of the building.

Q22 By the way, who was present representing the Williams Company at that time? A. Mr. Graves Williams, Mr. Forrest Williams, and a Blaine Matthews.

Q23 Mr. Forrest Williams is the gentleman who is here in court? A. Yes. And Mr. Blaine Matthews, I believe—he at that time, at least, was an official of the Williams Company, and of course Mr. Toulmin was present, and I believe there was one or two other men came in and out of the room during our inspection.

Testimony of Thomas J. Ryan.

Q24 You asked permission to see the other machines?

A. Yes, sir, but that was refused by Mr. Toulmin.

Q25 These gentlemen told you they had four of these machines? A. Yes.

Q26 Did they say they were all alike? A. They said they were all alike.

Q27 I wish you would describe the operation of that machine, describe the machine in general as you saw it at the Williams plant, and also describe the machine that we have seen here this morning in the presence of the court. First describe the machine as you saw it at the Williams plant; then I will ask you to point out any differences between that machine and the machine which we saw this morning. And for the purposes of your explanation you may use this photograph which appears in this Moenus catalogue. Here is another picture. Your Honor, both of these show it, show the machine, and they will be useful in the witness explaining the differences and what he means.

MR. TOULMIN: If the court pleases, I want to say that this raises a fundamental issue of great importance to this defendant. The machines that we got from Moenus are machines that must stand here as they were delivered to us and have been offered. That is the issue here—not what the Moenus Company may have made or what other people may have shown by their catalogue. I understand from the representative of the Moenus Company here that they had other variations of this machine for supply of these catalogues to other countries and the United States of these other machines.

THE COURT: You mean the illustrated cuts here are not the same as the machine that they sold you?

MR. TOULMIN: I mean if I can examine them I would like to do so. I understand there are some differences. I want to be sure of it, because Your Honor wouldn't want to pass from one machine to another one.

THE COURT: No.

MR. TOULMIN: There shouldn't be any dispute about the machine that is before us. (After examining photographs): Your Honor, I can see from a hasty examination of this page, which has no number but the one open to you with a check mark on it, that this Moenus catalogue, or Moenus machine, rather, shown by the operator, is an entirely different one from that out in the hall or any one of our four machines.

THE COURT: Is it a heel seat lasting machine?

MR. TOULMIN: It is a heel seat lasting machine but a different heel seat laster, not our heel seat laster.

Testimony of Thomas J. Ryan.

The construction is entirely different from ours. Are you marking these for identification?

MR. LYMAN: Yes.

The catalogue referred to, entitled "Moenus Maschinenfabrik A.-G., Frankfurt am Main Albeko Shoe Machinery Corp. 710 Broadway, New York, N. Y., was thereupon marked for the purpose of identification **Plaintiff's Exhibit No. 10.**

The page in Exhibit No. 10 particularly referred to by counsel, bearing a check mark and "c" in the corner, was marked for the purpose of identification **Exhibit No. 10-A.**

A circular consisting of four pages and bearing on the first one, among other things, "Maschinenfabrik Moenus A. G. Frankfurt A. M. No. 1224 Calzera Heel Seat Lasting Machine" was marked for the purpose of identification **Plaintiff's Exhibit No. 11.**

MR. LYMAN: May I call attention of the court to the fact that there are certain other photographs of this machine on five pages, which I am marking with pencil "a", "b", "c", "d" and "e", which are under the heading "The 'Calzera' automatic heel seat laster No. 1224." Plaintiff's Exhibit 11 for identification also is entitled "Calzera Heel Seat Lasting Machine with single tack drum No. 1224."

Thereupon the court and counsel for defendant examined the catalogues.

MR. LYMAN: I am putting in pencil the letters "a", "b", "c" and "d" on the four pages of Plaintiff's Exhibit 11, respectively.

MR. TOULMIN: Now, if the court please, we object to the introduction of these catalogues as showing the Moenus machine because the issue here is whether the machines as we actually received them and have had them and operated them in this country as set up, are the infringement, of which we have a sample here in the hall. Now, our particular objection to these catalogues, objection to these in connection with the illustration, I am advised these are quite recent catalogues. That is not correct.

MR. LYMAN: Did the reporter get that? You say that is not correct?

Testimony of Thomas J. Ryan.

MR. TOULMIN: It is a 1934 catalogue. On page "c" the machine is an entirely different machine than the one we have.

THE COURT: Is it an entirely different machine, or is it substantially the same machine with the refinements?

MR. TOULMIN: No, Your Honor, it seems to me to be an entirely different machine.

THE COURT: The illustration you are looking at, is that a heel seat lasting machine?

MR. TOULMIN: Yes, it is a heel seat laster, and there are a lot of heel seat lasters, but this is not the machine in controversy here and I don't want to go to trial on a machine that is not in controversy, because that would be just a fruitless procedure.

On page "e" of this catalogue Exhibit 10 the construction there I see varies from the way that it has been operated and as existed in the Williams plant from the time that the machine was set up, according to my information. That is a matter of dispute for my brother here. He will have to put proof in on that. Otherwise, from a superficial glance at it, it looks like the same machine.

Now going to page "a" of Exhibit 11, this is an illustration of the machine, just a photograph. We have no objection to that, of course. On page "b" we object to that portion because it illustrates an entirely different machine as set up there. The rest of the two pages are devoted to descriptive matter I have not read and I will not stop to take the time now, Your Honor, because that would be of course just self-serving. There are no admissions against interest because the Moenus Company is not a party to this cause.

In view of those circumstances we object to the parts that I have had a chance to examine of these two catalogues. If plaintiff here wants to make out its case it has full opportunity to do so with the machine here. I have given them an inspection voluntarily and have given them ample opportunity to show our machine.

MR. LYMAN: These are the illustrations which we want to show, Your Honor.

THE COURT: Of course, it is your case, and if it is your position that those machines substantially represent the machine in issue, it is your case and will be received subject to objection by the defendant.

MR. TOULMIN: So Your Honor knows our position.

MR. LYMAN: They will be received in evidence?

THE COURT: Yes.

Testimony of Thomas J. Ryan.

The catalogues so admitted in evidence are made part of this record as **Plaintiff's Exhibits Nos. 10, 10-A and 11.**

By Mr. Lyman:

Q28 Will you tell us whether this machine out in the hall bears the number 1224 and whether it is a heel seat laster? A. Yes, it bears the number 1224 and is a heel seat laster.

THE COURT: The catalogue number is 1224 and the machine in the hall is 1224.

MR. TOULMIN: Manufacturers frequently have the same model and make variations in the model, and if you want us to admit that is 1224 and is referred to as 1224 from the Moenus Company, we will be happy to do so.

MR. LYMAN: You don't have to do that. It is right out in the hall.

MR. TOULMIN: We do admit it.

MR. LYMAN: You had better.

THE COURT: Just proceed.

By Mr. Lyman:

Q29 Taking, Mr. Ryan, these Exhibits 10 and 11, you may make such use of them as you may require in describing these machines. Now, if these do not represent the machine which you saw at the plant of the Williams Company or the machine in the hall, call attention as you go along to the respects in which they differ.

THE COURT: Wouldn't it be better now—It is understood from Mr. Ryan's statement in the hall that two of the claims were eliminated on his statement there, that the claims of infringement on upwiping were eliminated.

MR. LYMAN: I think, Your Honor, we are in a position where we are unable to prove a case of upwiping, and that therefore the claims relating to that feature, which are claims 68 and 71, may be disregarded from now on.

THE COURT: All right; that limits the claims in suit.

MR. LYMAN: That limits the claims in suit.

THE COURT: There were originally seven McFeely patent claims and two are now withdrawn; 68 and 71 are withdrawn, and that limits it to five claims on the McFeely patent and 19 and 21 on the Hoyt patent.

MR. LYMAN: Yes, Your Honor.

Testimony of Thomas J. Ryan.

MR. TOULMIN: It is going to be the position of defendant, so they will know it right now, that claim 42 is a claim that calls for mechanism that performs upwiping and is a true upwiping claim. I want them to know that.

THE COURT: Claim 42 does not cover upwipe only; it includes it. Is that right?

MR. LYMAN: It includes a mechanism which might include upwipe but is not limited to upwipe.

THE COURT: 42 is not limited to upwipe but includes it.

MR. TOULMIN: If it includes it and we don't have it, then we don't infringe the claim.

THE COURT: That is a matter of argument later.

MR. TOULMIN: I want to make it clear we don't acquiesce. 68 and 71 are upwipe claims.

THE COURT: Just so we have no mistake about it, 42 is a claim which covers the general machine and includes upwiping, and it is the position of defendant that if it includes upwiping in 42 you don't infringe because 42 contains the upwiping feature.

MR. TOULMIN: That is right. Before the witness proceeds on this question I am going to make one objection and ask it run through all the testimony, just to save time. We object to the use of the Moenus catalogue on machines and features of machines that are not involved or shown or part of the four machines that are in the subject of the suit.

THE COURT: That is the reason I brought that up right before this question. It will be unnecessary for this witness to cover any features that are not at issue in the suit. His testimony will be limited to five claims on the McFeely patent and 19 and 21 on the Hoyt patent. The testimony will be limited to that. All right.

By Mr. Lyman:

Q30 / Please go ahead and describe the machine which you saw at the Williams plant, the defendant's, the Moenus heel seat laster that you saw there. A. The

heel seat lasting machine that I saw at the Williams factory had the name "Moenus" cast in the head frame and the model number, 1224, stamped on the machine. The serial number had been obliterated. The machine was provided with a pivoted shoe supporting jack, a U-shaped flexible leather heel band, wipers which were formed in three sections, a narrow central wiper and two curved side wipers. The machine was provided

Testimony of Thomas J. Ryan.

with tackers and with a hold-down for controlling the heightwise position of the shoe in the machine. The shoe supporting jack comprised a jack frame pivotally connected at its lower end to the base of the machine, and vertically movable in that jack frame was a jack rod carrying at its upper end a heel band for engaging the last in its spindle hole at the heel end, and a toe rest engaging the top of the fore part of the shoe. When the shoe is initially at rest that jack is in a forwardly inclined position. Also carried by the jack frame is a hand lever, by means of which the operator may depress the jack post, the shoe and its supporting means, to permit the shoe to be moved into the machine under the hold-down.

Q31 Just talk a bit louder. A. In the operation of the machine, after the operator mounts a last and shoe on the shoe supporting means, he swings the jack rearwardly and by means of the hand lever depresses the jack, the shoe supporting means and the shoe, to permit the shoe to move under the hold-down. With the shoe under the hold-down he can release the hand lever to permit a spring that surrounds the jack post to move it upwardly to press the bottom face of the insole at the heel end against the hold-down, this occurring during the continued rearward movement of the jack to engage the heel end of the shoe with the U-shaped heel band.

With the shoe thus presented in the machine the power operation is started by depressing the treadle, whereupon, in the machine that I saw at the Williams factory, the hold-down was moved downwardly, then the U-shaped band was closed about the heel end of the last, and simultaneously with the closing movement imparted to the heel band the shoe supporting jack was pulled rearwardly to press the shoe harder against the heel band, and the jack post was raised to force the shoe harder against the hold-down. With the heel band closed and the shoe positioned by the hold-down below the plane of the wipers, the wipers were advanced and closed to lay the marginal portions of the upper materials around the heel end inwardly over the bottom face of the insole and were then retracted and opened. The hold-down was then raised and with it the jack and shoe, and at the same time a further closing movement was imparted to the heel band and a further rearward pull was exerted on the jack and a further upward pressure exerted on the jack post. After the upward movement of the hold-down, and with it of course

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the last and shoe and the heel band, the wipers were advanced and closed a second time. At the end of the second advancing and closing movement of the wipers tacks were driven simultaneously around the heel end of the shoe, to fasten the over-wiped marginal portion of the upper to the insole. At the end of the tack-driving operation the heel band was opened, the hold-down was moved down to relieve the pressure on the wipers, and the wipers were opened and retracted and the parts returned to their initial starting positions.

Q32 With reference to that sequence of operations which you have now described as you saw it in the machine at the Portsmouth factory, is all that equally descriptive of the machine which you saw in the hall this morning, the defendant's machine here? A. Yes, sir.

MR. TOULMIN: Mr. Lyman, may I suggest we mark that machine out here for identification? I can't put it in evidence because it is our production machine, but if we ever want to use it again—

THE COURT: —Why not call it Exhibit 1224, and you will know what it is.

MR. LYMAN: I will mark that machine for identification, Your Honor, as Plaintiff's Exhibit 1224.

MR. TOULMIN: We would prefer to have that defendant's exhibit, because we don't want to give you control of our exhibit by any inference of that sort, because that is a production machine. We don't care how you mark it. We will have to take that machine back.

THE COURT: There is no question about that.

MR. LYMAN: No, Your Honor. We have to do something to get a record as to the arrangement for that machine.

THE COURT: Could we do this? Somebody assume responsibility for having a picture of that machine taken as it rests in the hall.

MR. LYMAN: We will do that. We also want some photographs that show the parts in disassembled condition. The mechanic is working on that now. We will assume responsibility of getting some photographs of those parts there, so we will have something.

THE COURT: When you take the photographs you can chalk those numbers on the machine and they will show.

MR. LYMAN: I don't understand what you mean.

THE COURT: Chalk that "1224" and that will tie in.

MR. TOULMIN: The other side call my attention to

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the fact that there is a chalk mark on the side. It is Number 2 in the series.

MR. LYMAN: It is Number 2 of your four machines?

MR. TOULMIN: Yes. He states there is a chalk mark on it.

The defendant's machine was thereupon marked for the purpose of identification **Plaintiff's Exhibit No. 1224.**

By Mr. Lyman:

Q33 What was the motion imparted to the wipers in this machine in their closing movement? What sort of a motion do they have? A. They have an advancing and closing motion, that is, they move lengthwise of the shoe and at the same time they are swung toward each other laterally of the shoe.

Q34 And what is the relationship between the wipers in that machine and the tackers? A. The tackers are always maintained in predetermined relation to the wipers.

Q35 So that they move together with the wipers in that machine? A. They move together with the wipers during the preliminary adjustment of the wipers and also in the power operation of the machine.

Q36 And how is that accomplished in that machine? What is the inter-relationship between the parts by which that is made possible? A. In the defendant's machine, or the Moenus Model 1224, the wipers are carried by wiper carriers. They are fastened to wiper carriers held by screws. The bottom face of the wiper carrier is recessed to receive the wiper. On the top face of the wiper carrier are mounted the tackers, and these are secured to the wiper carrier by screws threaded into the wiper carriers.

Q37 What arrangements were there in that machine for adjusting the position of the wipers, and with them of the tackers, for a preliminary adjustment, if necessary? What are the arrangements? A. The machine is provided at the right-hand side with a rather large hand wheel which is fastened to the outer end of a laterally extending shaft, and on that shaft are two spiral gears meshing with two other spiral gears. On the rearward ends are forwardly extending threaded rods. Both the laterally extending shaft and the forwardly extending rods are supported in proper bearings. The threaded rods extend through rack bars that are slidably mounted in a top cover plate, which is also slidably

Testimony of Thomas J. Ryan.

mounted in the head of the machine and carries a rearward extension and the cam roll for engaging the cam track between the end faces of the cam block. By rotation of this hand wheel I could rotate the threaded rods and move the rack bars either forwardly or rearwardly, and in response to the forward or rearward movement of the rack bars I noticed that the wipers were opened or closed so that merely by turning the hand wheel in one direction you could close the wipers rotating it; in the other direction you could close the wipers and thereby adjust them preliminarily for the size of shoes to be operated upon.

Q38 How were they operated, those wipers, in the power stroke of the machine? A. In the power operation of the machine this top cover plate was moved forwardly, the rack bars were stationary, and in response to that forward movement of the top cover plate the wipers were moved bodily forward and were also swung toward each other to close about the heel end of the shoe.

Q39 Will you explain the adjustment that there was in that machine for the heel band? A. Yes, sir; there was an adjustment in the machine for varying the position of the heel band lengthwise of the shoe with respect to the wipers and tackers, and also an adjustable unyielding link for adjusting the initial open position of the band. The heel band itself was supported at its forward ends by clips relatively to which it would slide lengthwise of the shoe, and at its forward ends, above the clips, there were pressure members that in the power operation of the machine would move toward each other to close the band. At its rear end the heel band that I saw in the machine at the Williams factory at its rear closed end had secured to it a slotted clip. At its rear closed end also the band is engaged by a back stop which is carried by an adjustable slide. Also mounted in that slide is a stud which had a threaded hole in it apparently to receive the screw for fastening the clip to the slide at its rear end—fastening the heel band to the slide at its rear end. Engaging what we term the corners of the heel band in the machine that I saw at the Williams factory were pressure plates apparently carried by loosely mounted arms and acted upon by spring-pressed plungers because we, Mr. Condon and I, were able to move the arms independently of each other against the resistance of a spring that acted on the plunger. The slide which carried the vertical stud which

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was provided with a threaded hole at the rear closed end of the band, was geared to a laterally extending shaft, and on the other end of that shaft was a short hand wheel provided with a spring-operated pawl for engaging teeth on the segment to lock it into position. By movement of that hand lever you could move the slide forwardly and rearwardly in the machine and impart at least a forward movement to the heel band.

Q40 That is, that is the means for adjusting the fore and aft position of the heel band? A. Yes, sir.

Q41 They had such a means in defendant's machine? A. Yes, sir.

Q42 As to that screw, you say there was a space for a screw and clip? A. There was a threaded hole to receive the screw and a clip through which the body portion of the screw was extended.

MR. LYMAN: It was stated by Mr. Toulmin, Your Honor, in his opening statement that the machines had that screw originally.

THE COURT: He made that same statement out in the hall.

MR. TOULMIN: Yes.

MR. LYMAN: And it was used for a period of time with those screws in place.

MR. TOULMIN: And I shall prove it lasted only a short period of time, that that short period of time terminated a couple of years before this issue arose, when the screws dropped off finally and the machines were operated in that condition until you made the statement they could be restored, and then I had the clips sawed off before the suit was brought.

THE COURT: That is another matter.

MR. TOULMIN: I want to make that complete statement.

MR. LYMAN: For the present purposes it is sufficient to say that the machines were operated with that screw in place for some period of time by the defendant; is that correct?

MR. TOULMIN: Yes.

THE COURT: Also, there is in dispute the testimony between the witnesses you will produce and this witness as to that fact.

MR. LYMAN: Not as to that fact.

THE COURT: I mean as to that spring.

MR. LYMAN: As to another point.

THE COURT: Yes. All right.

Testimony of Thomas J. Ryan.

By Mr. Lyman:

Q43 You have described then, I think, the method that was provided in that machine for the adjustment of the heel band. Now will you describe the arrangement by which that heel band was closed during the operation of the machine, power operation? A. In my inspection of the machine we turned it over several times by hand to time it. The mechanism for closing the heel band was controlled by a cam formed on the rear face of a cam block at the head of the machine.

Q44 By that you mean, Mr. Ryan, for my information, a cam path? A. Cam path.

Q45 Formed on the rear face of a cam? A. Yes.

Q46 That is the way I understand it better. Go ahead. A. Of course, I could not see in the machine the connections from a certain slide, dark slide in the machine, rearwardly to the cam path, but the slide having the rack teeth on it was apparently moved in the direction of the length of the shoe in response to the swinging of a bell crank lever pivotally connected on the outside at the left of the machine, and that bell crank lever had an upwardly extending arm carrying a cam roller engaging that cam path on the rear face of the block. I could, however, see that there were pivotally connected to the end face of the head casting bell crank levers having inwardly extending arms provided with gear teeth meshing with teeth formed on two rack bars, and that those bell crank levers had forwardly extending ends and the pressure members and clips at the forward end of the band.

Q47 And this heel band, I don't remember whether you stated that in the adjustment of the heel band it freely slides forward past its supporting means and past the pressure members that are directed to engage it? A. Yes.

Q48 Have you stated on these pressure members that operate on the forward ends of the heel band whether or not there was any yield in their movement? A. No yield in their movement at the forward ends?

Q49 At the forward ends. A. No yield in their movement.

Q50 And at the rear ends there were independent loosely mounted arms, each of them spring-pressed? A. Yes, sir.

Q51 In the machine as we examined it this morning in the hall we were told that the springs in those, which were present in the machine at the far end or right of

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the heel band for pressing those loosely mounted arms together had been removed. A. Yes, sir.

Q52 You could not verify that fact by an examination of the machine this morning? A. No, sir.

Q53 Now this machine this morning, the machine in the court room this morning has a heel band in it in which that clip that you have spoken of has been partially sawed off; is that correct? A. Yes, sir.

Q54 In that respect the machine that you examined this morning differs from the machine which you saw at the Williams plant? A. Yes, sir.

Q55 Will you tell us with reference to that machine that you saw at the Williams plant whether there was any means for adjusting the position of the hold-down or rest—well, the hold-down? A. Yes, sir. The machine had mechanism for varying the initial position of the hold-down and also mechanism for varying the extent of its movement heightwise of the shoe.

Q56 I will ask you first to explain what the mechanism was which adjusted the original position of the hold-down. A. In the Moenus machine there is a cam path formed on the front face of the cam block which we have previously referred to. Pivotally connected to the head casting is an arm carrying the cam roll, and connected to that arm at its forward end is a spring which is connected at its rearward end to a fixed pin, and tends to swing that arm rearwardly and hold the cam roller against this cam path, if permitted to do so, by an adjustable abutment. Pivotally connected to this arm which carries the cam roller is a forwardly extending sleeve threaded to receive a rod which extends forwardly through a rack bar geared to the hold-down by means of a laterally extending shaft in a yoke at the front of the machine. Fastened to the outer end of that rod is a small hand wheel, by means of which you can rotate the rod and thread it into or out of the sleeve and thereby vary the initial position of your hold-down. By adjustment of the abutment that engages the arm you can position the cam roller closer to or further away from the cam track or cam throw and thereby vary the extent of movement imparted to the hold-down at the beginning of the cycle of the machine.

Q57 Can you show His Honor on any of these photographs in either of these exhibits what you mean by that adjustable stop you have last been referring to? A.

Yes, sir, it is shown in this cut (indicating).

MR. TOULMIN: Give the exhibit number.

Testimony of Thomas J. Ryan.

THE COURT: That is there on the side.

MR. LYMAN: Witness refers to photograph which appears in Plaintiff's Exhibit 10 at the page marked "e". A. This is the abutment and I am pointing to the illustration on page "e".

By Mr. Lyman:

Q58 Use a pen and attach a letter to it. A. A reference numeral?

Q59 Put a reference numeral on it. Call it "X". A. (Marking exhibit): I have applied the reference character "X" to the adjustable abutment shown on page "e" of plaintiff's Exhibit 10. By adjustment of that abutment you vary the position of your cam roller with respect to your first throw on the cam; that is, if you move it nearer the throw you take advantage of more of the throw than if you move it away from the throw, so you get a greater power.

THE COURT: The purpose of that was to limit the movement of the hold-down.

A. To vary it, to give it more or less movement downwardly at the beginning of the cycle. It may of course control its upward movement between the wipes.

Q60 In the machine that was brought here to court, and which we have marked for identification as Exhibit 1224, is that adjustable stop present or is it not? A. It is not.

Q61 Such a stop was present in the machine which you saw at the Williams factory. A. Yes, sir.

Q62 When you saw it there? A. Yes, sir.

Q63 And in this machine is there a screw threaded aperture corresponding to the position in which that adjustable stop would be? A. Yes, sir. There is another part present on this machine here that was not present on the machine—

THE COURT: --That set screw?

A. That is that locking nut with the little pin in it.

Q64 Explain that on the record—The machine that is in the court house here? A. Yes. The machine in the court house has on the forwardly extending rod that forms a part of the hold-down operating mechanism a nut provided with a small upwardly extending pin. And that nut and pin were not on the machine, the Moenus machine that I inspected at the Williams factory.

Q65 On the machine here in the court house which defendant has produced, what has been substituted for that adjustable stop which you have marked "X" in the

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photograph that is on page "e" of Plaintiff's Exhibit 10? A. Apparently a fixed stop that engages a shoulder on the arm and limits the backward movement. That can be adjusted permanently.

Q66 : What was the means by which this machine was given its power operation, the machine that you saw at the Williams plant? A. It was individually motor driven.

Q67 Is that equally true of the machine which is here in the court house today, Exhibit 1224? A. Yes, this is driven by a motor through a gear reduction box.

MR. TOULMIN: So that there will be no unfair inference from that later, Your Honor, I want to repeat right here on the record that the reason it has a gear reduction box was when we got here there was not sufficient power to drive a large motor so we had to put on a gear reduction box.

MR. LYMAN: No point to that, Your Honor.

By Mr. Lyman:

Q69 To change to another subject,—first, how long did it take you to operate this defendant's machine? What is the cycle? A. A fraction of a second.

Q70 About the same as the case in the model of the United Shoe Machinery Company heel seat laster? A. Yes, sir.

Q71 To change to another subject, do you know whether the United Shoe Machinery Corporation laster has been sold in foreign countries? A. Yes, sir.

Q72 In what foreign countries? A: In the principal continental countries of Europe.

MR. TOULMIN: We object, Your Honor. We don't think that has anything to do with a United States patent and a United States question.

THE COURT: It goes back to that prior question about the commercial success.

Q73 In the principal countries of Europe? A. In the principal continental countries of Europe, South America, England.

Q74 Have you now stated all the differences that you have observed between the machine produced by defendants in the court room here, Exhibit 1224, and the machine that you saw at the defendant's plant at Portsmouth, defendant's factory at Portsmouth? A. I think I have.

Q75 The machine that is exhibited here, Exhibit 1224 has a serial number on it, has it not? A. Yes, sir, but I haven't memorized it.

⊖ Testimony of Thomas J. Ryan.

Q76 But in that respect it differs from the machine which you saw at Portsmouth? A. Yes. I believe I stated that the serial number on the machine that I inspected at the Williams factory had been obliterated. I do not believe it is the same machine that is in the hall. There was another difference, Mr. Lyman.

Q77 All right. A. The machine that I inspected had the figure "4" painted on the front yoke; this one has the figure "2".

MR. LYMAN: If Your Honor please, I think that is all I have for this witness, but I should like, if it is a suitable time, to adjourn to look over my notes.

THE COURT: All right.

Thereupon a recess was taken until two o'clock in the afternoon of the same day, Wednesday, January 18, 1939.

AFTERNOON SESSION.

WEDNESDAY, JANUARY 18, 1939.

Court met pursuant to recess, counsel being present on behalf of both parties.

Thereupon,

Thomas J. Ryan,

resumed the stand and testified further, as follows:

By Mr. Lyman:

Q78 Mr. Ryan, can you show us on any of these illustrations in Plaintiff's Exhibits 10 and 11, those clips which you spoke of, which hold the heel band in defendant's machine, allowing it to slide with reference to the clips and the presser members? A. Yes. They are shown in the picture on page "d".

Q79 Page "d" of Plaintiff's Exhibit 10. A. These are the clips and the presser members that engage the band above its lower edge.

Q80 Apply the letter "c" to the clip, will you, in that photograph? A. (Witness marks photograph.)

Q81 And the letter "p" to the pressure member that you refer to. A. (Witness marks exhibit as directed.)

Q82 Those clips, the supporting clips, how do they engage the heel band? A. They have short upwardly extending portions engaging slots in the arms of the

Testimony of Thomas J. Ryan (Resumed).

band so that the band can slide in the clips as it is adjusted lengthwise of the shoe.

Q83 And on what portion of the heel band do these pressure members exercise their force? A. The upper portion, that is, the portion of the band above its lower edge, and from its top edge down a short distance on each side.

Q84 In the defendant's machine as you saw it at the Williams factory and also as you saw it in the court house this morning when, with relation to each other, do the closing movement of the heel band on the last and the downward depression movement of the hold-down take place? A. The hold-down is moved downwardly substantially at the beginning of the cycle of operations of the machine, and as that downward movement is completed the closing movement of the band commences. Those are produced by cam tracks or paths on the cam wheel.

Q85 That is, the cam surfaces determine the relationship? A. Yes, the cam surfaces determine the relation between the movements of the hold-down downwardly, the first downward movement of the hold-down and the closing movement of the heel band.

Q86 In fact, the cam surfaces determine the sequence of all of these power movements in the defendant's machine, do they? A. Yes, sir.

Q87 As the hold-down moves down does the jack simultaneously move down with it? A. Yes, sir.

Q88 And as the hold-down rises does the jack rise simultaneously with it? A. Yes, sir.

Q89 How does that happen in defendant's machine? A. Because there is in defendant's machine a spring that surrounds the vertically movable jack post in the jack frame. That spring permits the supporting means and the shoe to move down with the hold-down and it also acts to move the shoe up when the hold-down is moved up. Of course, in the power operation of the machine, after the hold-down completes its first downward movement, the cam acts through mechanism to compress that spring to cause it to force the shoe up against the hold-down. That compresses the spring and the shoe will move up with the hold-down, and between the overwiping movements of the wiper that mechanism is actuated again to force the shoe up to cause it to follow the hold-down when the hold-down is elevated between the wipers.

Testimony of Thomas J. Ryan (Resumed).

Q90 As to these two wiping movements, when the first one takes place what is the position of the last and the inner sole with reference to the plane of the wipers?

A. The bottom face of the insole is below the plane of the wipers, below the bottom face of the wipers.

Q91 And that first movement of the wipers is what you call the "breaking"? A. "Breaking down" movement.

Q92 And when the second wiping movement takes place where is the bottom surface of the last with reference to the plane of the wipers? A. The bottom surface of the face of the insole is nearer, closer to the plane of the wipers.

Q93 Substantially in the plane? A. Substantially in the plane, allowing for the thickness of the materials between the bottom face of the insole and the face of the wiper, so you get a hard compacting pressure, friction wipe.

Q94 With reference to this matter of this adjustment for the heel band to enable it to be slid back and forth in its supports, you say that as you saw the machine in the defendant's factory and again this morning the machine here in the court house, there is no screw to connect the back end of the heel band with the slide which moves it forward; that had been removed? A. That had been removed.

Q95 Notwithstanding the removal of that screw or the sawing off of that clip, was the heel band supported in the machine? A. Yes, sir.

Q96 And that was true both of the machine which you saw at the Williams factory and of the machine in the court room this morning? A. Yes, sir.

Q97 And so far as the work producing feature of that adjustment was concerned did or did not the absence of that clip and that screw make any substantial difference in the operation? A. No difference as I saw it.

CROSS EXAMINATION

By Mr. Toulmin:

XQ1 Just tell us, Mr. Ryan, how the back of the heel band is supported in the machine out here in the hall and in the one that you saw down in Portsmouth when the clip is not connected to the actuating member in the back of the machine. A. It is supported by the back stop.

XQ2 What do you mean by the back stop? Can you point it out on the machine? A. Yes.

Testimony of Thomas J. Ryan (Resumed).

MR. TOULMIN: May we adjourn, Your Honor, to the—

THE COURT: —I understand just the point.

MR. TOULMIN: I would like to have him point it out, Your Honor, because I don't understand it myself, what he is referring to.

THE COURT: It is right here (indicating on Exhibit 8-A).

A. This is the part right here (indicating on Exhibit 8-A).

MR. TOULMIN: Just a minute. I will bring in the part which has been disassembled. If you will indulge me, Your Honor, I would like to have it before me. Meantime I will ask him another question.

THE COURT: All right.

By Mr. Toulmin:

XQ3 Mr. Ryan, you said when you made the visit to Portsmouth that you examined this machine we showed you for a serial number. As I understand it, you said that number had been obliterated or erased; is that correct? A. I said it had been obliterated.

XQ4 Where did you look for the serial number? A. I looked for the serial number alongside of the model number, that is, the same relation to the two numbers that are on this machine out here.

XQ5 You looked in the same place and on the present machine, the machine out here, the Number 4 machine— A. —Number 2.

XQ6 The Number 2 machine, that is on the left-hand side of the machine about eye height? A. I should say on the right hand.

XQ7 It depends on which way you face. Facing the machine it is on the right hand side.

XQ8 Did you make any note of that fact at that time upon which you base your present testimony that you found no serial number on that machine? A. No; no.

XQ9 What is the serial number of this machine today? Did you make a note of that one? A. No.

MR. TOULMIN: I would like the record to show, so we will get it, that it is 1224—that is the model number—87002.

MR. LYMAN: 87902 would be the serial number.

MR. TOULMIN: Yes, on this machine out here. I just sent a man out to get it and he says it is on there.

Testimony of Thomas J. Ryan (Resumed).

By Mr. Toulmin:

XQ10 Coming back to this support for the heel band, I have had brought into the court room from the machine in the hall of the defendant, the apparatus which I understand you say is the means for supporting the back of the heel band. (Addressing a gentleman in the court room): Will you bring me the heel band too, please, from out there? While we are waiting for the heel band, will you look at this back support and tell me if it is not a fact that it tapers downwardly and backwardly at the point where I place my finger? A. Yes.

XQ11 (After heel band was brought in): Will you place this heel band in position where you say it is supported by this back stop or back support? A. There are the marks of the back support, right there (indicating).

XQ12 Will you explain to the court how there can be any support, as there is no physical connection between that heel band and this back member, pressure member? A. Well, it engages for a part of its length (indicating). Even with the clip and spring removed that band stayed up in the proper heightwise relation to the wiper.

XQ13 As a matter of fact it stayed up because it was supported at both ends by the clips which you described at the forward end of the heel band; isn't that true? A. Obviously they help that.

XQ14 You will be willing to admit, won't you, that there is no physical way of supporting this heelband on the back stop except by some friction which you say exists; is that correct? A. No, I think there is—in addition to friction there is probably some contact of this band with this member or back support that prevents the band from sagging or dropping down at its rear closed end because of the positions or the position at which it is supported at its front end.

XQ15 There is no physical connection between these two members, the heel band and the back support, is there, other than whatever frictional engagement there may be? A. There is no physical connection?

XQ16 Yes. A. Well, the band isn't attached to the back stop.

XQ17 Therefore, there is no physical connection except the frictional engagement; is that correct? A. The physical connection is between my hand and the table (indicating).

XQ18 No, that is frictional; I am excepting that. Aside from friction, any pressure that may be against

Testimony of Thomas J. Ryan (Resumed).

there, there is no mechanical attachment of any sort, is there? A. I will say that the band is touched.

XQ19 And if any movement of that band is imparted in any way it is due to that partial engagement? A. No. I will say that the back stop prevents it from dropping because, as I see it, before this back end could drop it would have to be moved out of contact with that.

XQ20 You admit that the band is tapered downwardly? A. Yes.

XQ21 And laterally. And the inside of this smooth pressure member is tapered downwardly? A. Substantially the same as this.

XQ22 So there is no means of holding them except friction; is that right? A. Friction and contact.

XQ23 All right. Is it your position, Mr. Ryan, that that is the full equivalent of having the physical connection? A. Yes.

MR. TOULMIN: I might say to Your Honor that the purpose of that question is this, since you have it in mind, that the first McFeely patent shows that sort of a free connection. We expect to prove that to you, so that the equivalency will be applied later.

By Mr. Toulmin:

XQ24 I was puzzled this morning, due to my ignorance in the matter, to find out what it was that you meant by the nut of some sort that had been added to the machine in the hall, which did not appear upon the machine that you saw at Portsmouth. Will you point out that nut to me, just verbally, if you can, so I can look at it? A. You know the threaded rod that extends forwardly at the left-hand side of the machine?

THE COURT: You can take that illustration.

A. It does not appear in the catalogue.

THE COURT: It is right below that spring portion, isn't it—right in front of that spring portion?

A. Yes, sir.

XQ25 Look at this page "e" I have,—His Honor is correct—of Exhibit 10 and point out what part you are referring to. A. The nut would be on this (indicating).

XQ26 Don't you find the nut there now to lock that in position found in that illustration? Let me call your attention to the nut just in front of that sleeve. A. Well, there appears to be a nut on there.

XQ27 Is that the nut that you said was missing on the Williams machine? A. Yes, sir.

Testimony of Thomas J. Ryan (Resumed).

XQ28 And that is the nut that you now find out there on our machine in the hall? A. It appears to be a similar nut with a little pin in it.

XQ29 Will you mark on there "Y" with a pen the nut that is found in that catalogue? A. (Witness marks exhibit.)

XQ30 I will hand you the nut that my associate has just brought from the machine, which you said was missing. It is marked 294-M, and will ask you if that is the nut you were referring to this morning. A. It appears to be the same nut.

XQ31 And that is the nut "Y" that you are referring to in this catalogue, is it? A. Except that it has this pin in it. I don't see the pin in the catalogue.

XQ32 On that cut it would be difficult to see it, wouldn't it (handing photograph to the court)?

THE COURT: I know.

XQ33 Can you move the wipers in the machine in the hall of the defendant by hand longitudinally, or can you only move them longitudinally after adjustment and only by the power stroke? A. You can't move them bodily forward by hand adjustment.

XQ34 That is what I mean. They are only moved bodily forward by the application of power. A. By power operation of the machine. That is to say, you adjust them toward and from each other and you get some slight movement, I suppose, in the forward direction.

XQ35 The longitudinal movement is solely a power movement, isn't it? A. Yes, sir.

XQ36 Did you make any drawing, sketch, photograph or note at the time of your visit to the Williams plant which justifies you in saying that the plate on the side of the machine was not as it now appears in connection with the cam on the machine in the hall, but was rather like the "X" shown in this catalogue, Exhibit 10? Did you make any contemporaneous record at that time that you can refer to now to refresh your memory? A. Yes. I made a note at the Hotel Hurd on the afternoon that I inspected the machines, in which I set forth the differences—for my own benefit—between the machine I saw at the Williams plant and the machine that I inspected in Milwaukee at the factory of the Weinberg Shoe Company.

XQ37 Can you produce that note now? A. Yes.

XQ38 Let us have it. A. (Witness produces a notebook.)

Testimony of Thomas J. Ryan (Resumed).

XQ39 You have produced this note. Where in this note is there any statement that this stop "X" was on the machine and not the construction now on the machine in the hall? A. There isn't any. I say here that: "I inspected a Moenus heel seat laster today at factory of Williams Manufacturing Company. Except that the cam on rear face of cam block in head of machine did not operate mechanism to close heel band and mechanism to draw shoe more forcibly into the heel band and to press shoe more forcibly against heel band until after the hold-down had completed its first downward movement and screw connecting heel band at rear end to adjusting slide had been removed, the machine was identical in construction with one I saw at factory of Weinberg Shoe Company in Milwaukee, Wisconsin, last December. Mr. George Condon was with me this afternoon and inspected the machine."

MR. LYMAN: What is the date of that note, Mr. Ryan?

A. December 19, 1936, Portsmouth, Ohio.

XQ40 And there is no statement in that stating that this stop "X" was a stop in that machine rather than a stop such as you see out there on the machine in the hall; is that right? A. There is no statement in there.

MR. LYMAN: You can see that note, Your Honor.

THE COURT: He has read it. That is sufficient, I think.

XQ41 With reference to the small spring in the steel chamber at the bight of the heel band, that is forcing the respective plungers against the bight of the heel band in the defendant's machine in the hall, you observed today, I think, and were so advised, that there are no springs in that machine now, but also you were advised that the springs had been in the machine at the time you inspected the Williams plant. Assuming those two conditions to be true for the moment, I want to ask you this question, whether we understand you to mean that those springs are vital to the successful operation of a mechanism of that kind or not? What is the situation? A. They certainly are vital.

XQ42 And if the springs are omitted then one of the vital factors in that mechanism has been omitted; is that correct? A. Yes.

XQ43 You mentioned this morning something about the Model A machine, or Model D machine, rather, which I understand is the Exhibit 4 out here we have been

Testimony of Thomas J. Ryan (Resumed).

looking at yesterday, is that correct, or was it Model A?

A. I made no statement about either the Model A or D.

XQ44 What was it you said about foreign sales this morning as to the McFeely machines? Didn't you make some statement on that subject? A. I said that many of them had been sold abroad, yes.

XQ45 What do you mean by the McFeely machine? Are you referring to Model A or Model D?

MR. LYMAN: Mr. Toulmin, if you are trying to lay a basis for asking this witness something about the Model A machine, go ahead; we are perfectly willing to have it.

MR. TOULMIN: Let us let the witness answer these questions, please.

MR. LYMAN: All right.

A. (After last question, was read): Both.

By Mr. Toulmin:

XQ46 Will you tell us whether the McFeely patent in suit, which I understand you to say, and your side says, is represented by Model A, has its counterpart as a patent in any foreign country in which these foreign sales took place that you talk about? That is, did any foreign government grant you any patent on this subject-matter corresponding to the United States patent? A. Not the subject matter covered by the claims in issue.

XQ47 As a matter of fact, no patent at all was granted in any country outside of Canada, was it, on this second McFeely patent now in suit here? A. I think so, but I don't know, Mr. Toulmin.

XQ48 You don't know. Do you know whether any attempt was made to get foreign patents corresponding to the second McFeely patent, which is the second patent in suit, in foreign countries?

MR. LYMAN: I object.

THE COURT: Yes. I don't know that this has any bearing here.

MR. TOULMIN: It has a vital bearing for this reason, Your Honor, that over my objection this morning they went into foreign sales. I want to show there were no patents abroad, that this construction was not recognized by any foreign government.

THE COURT: The ruling this morning was it was essential for plaintiff to prove, among other things, the commercial value of this patent. The testimony was they had made sales in Europe, in England. I don't see here, even granting no application was made for a

Testimony of Thomas J. Ryan (Resumed).

foreign patent, how that would alter the testimony that they had made sales in Europe.

MR. TOULMIN: I will be very happy to show your Honor. It is for this reason. You don't have proof of commercial success attributable to a patent unless you have got a patent in the country in which it goes. If they have not had patents abroad and they have gone into foreign sales attributing a lot of value to this patent which doesn't exist, I have a right to examine this witness on that subject, to bring out that fact.

THE COURT: For instance, if they had a sale of a machine in one country, what would be the benefit of applying for a patent unless the machine itself did produce a successful operation? It only goes to the weight of the evidence, as I see it, as to whether this machine has been accepted and it was a commercial success. That is the only purpose for which this evidence was received this morning. I think here the fact that no application may have been made, or one had been made and perhaps the patent not granted, well, if we have to go this far the court will have to take judicial notice of the state of affairs of Europe, for one thing. The objection will be sustained.

MR. TOULMIN: All right, Your Honor. May I make one more observation before I complete that, so you will have my complete position? One of the evidences of commercial success of which the court will take notice is that the organization is an established organization, with a sales force of established ability. When you consider such things as that, they may negative anything attributable to the patent, because the courts say the commercial success may be due to that, if they have no patents, the success per se, commercial success not attributable to patents, and may be comparable with the business in the United States where they have a patent.

MR. LYMAN: Your Honor has the point? Is it a good machine or not.

MR. TOULMIN: It is more than that.

MR. LYMAN: But that it is a good machine and a valuable contribution is shown by the way it has been received here and all over the world. It doesn't make any difference whether there are foreign patents or not. The demand for it is because it is a good machine.

THE COURT: I say it goes to the weight. The fact that the machine is purchased abroad and used abroad is just an element indicating that it is a commercial success.

Testimony of Thomas J. Ryan (Resumed).

MR. TOULMIN: I am not contending with Your Honor's ruling but I want to make a fair statement.

THE COURT: We haven't the facilities for determining. We don't know whether some of these foreign governments even have a patent office in operation.

By Mr. Toulmin:

XQ49 Now one more question, Mr. Ryan. As I understand it, the machine out there in the hall has a couple of large springs in it that are interposed between the cam lever that works on the cam that furnishes the power and the bell crank arms or the links at the ends of those arms that press the outer ends of the heel bands; that is correct, isn't it? A. Yes. I believe there are two springs in your machine in that location.

XQ50 What is the purpose of those springs? A. Why, the purpose of those springs is to permit the bell crank levers and the other parts to be swung, to be operated to close the band. Then after the band is closed, if there is a further throw on the cam the springs will yield.

XQ51 And it is necessary to have such a yielding connection in order to prevent (a) the breaking of the machine and (b) in order to secure an effective operation. That is true? A. Well, it is usual to put such springs into machines of that sort.

XQ52 That is true, isn't it, it is necessary to have those springs. A. It is usual. I couldn't say—perhaps it was necessary.

XQ53 What difference is there, Mr. Ryan, between having these two heavy springs in the line of transmission of power which I have just described, which you have identified, and having springs on the link arms of the end of the bell crank arms adjacent the ends of the heel bands so far as a yielding pressure is concerned? Is there any difference in effect? A. Yes. Having them adjacent the front ends of the band is the wrong place for them.

XQ54 They are at the front end of the band in the McFeely patent in suit, aren't they? A. Yes.

XQ55 And they are in the rear end in the McFeely patent in suit, aren't they? A. Yes.

XQ56 McFeely has both springs, hasn't he? A. Yes.

XQ57 And Hoyt has only the spring in the back; is that right? A. That is right.

MR. TOULMIN: That is all.

Testimony of Victor Cobb.

THE COURT: Any further questions?

MR. LYMAN: Nothing more; thank you.

Thereupon Mr. Ryan retired from the witness stand and

Victor Cobb,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Lyman:

Q1 Your name, please? A. Victor Cobb.

Q2 Age? A. Fifty-three.

Q3 Where do you reside? A. At Wellesley, Massachusetts, 680 Washington Street.

Q4 What is your occupation? A. I am a patent lawyer at the head of the patent department, United Shoe Machinery Corporation.

Q5 With offices where? A. Boston, Massachusetts.

Q6 How long have you been in the patent department of the United Shoe Machinery Corporation? A. Nearly twenty years; since the first of May, 1919.

Q7 When did the fact that there was a Moenus machine, heel seat laster machine which might be an infringement of your company's patents come to the attention of the United Shoe Machinery Corporation for the first time?

MR. TOULMIN: We object, Your Honor. I don't think that is material to this issue. The machines are here. They were in existence before the suit was brought and when they discovered it has no bearing upon the issue that is to be determined by this court at this time.

MR. LYMAN: May I read defendant's answer? Paragraph 26: "Defendant avers and is advised and believes that large numbers of the type of machine which it employs, which it purchased in Germany, have been sold and put into use in the United States and Europe without any complaint or suit being filed by plaintiff herein and based upon such acquiescence by plaintiff defendant herein proceeded" etc.

THE COURT: That puts the question at issue, it seems.

MR. TOULMIN: We don't have to anticipate our case.

Testimony of Victor Cobb.

THE COURT: Well, it is just a question of whether or not they acquiesced. If they did acquiesce and waived then it becomes part of their case too.

MR. TOULMIN: I think that is strictly rebuttal proof.

THE COURT: The point about it is they have certain requirements to fulfill to permit them to prosecute an infringement case. Since it is put in issue it becomes a part of their case, it seems, in chief. So you may have an exception.

MR. TOULMIN: Yes, Your Honor.

By Mr. Lyman:

Q8 Will you answer the question, Mr. Cobb? A. I first heard of the existence of such a machine in this country in the autumn of 1935.

Q9 And what did you do about it?

MR. TOULMIN: May my objection stand to this testimony?

THE COURT: All the way through the subject.

A. I sent Mr. Ryan to—

MR. TOULMIN: —I object to this question, Your Honor.

Q10 I will shorten the matter. By whom was this Moenus machine being promoted in this country, according to the information which came to you? A. The Albeko Shoe Machinery Company.

MR. TOULMIN: The information came to him. That don't say when.

THE COURT: However the information came to you, when was it first brought to your attention?

A. It was first brought to my attention in the fall of 1935.

Q11 What did you do about it with reference to the Albeko Shoe Machinery Corporation?

MR. TOULMIN: We object, Your Honor. Albeko is not a party here.

THE COURT: What did he do with reference to the fact it was brought to his attention?

Q12 Go ahead. A. I sent Mr. Ryan to Milwaukee to inspect a machine, a Moenus heel seat laster machine.

Q13 And Mr. Ryan reported it to you? A. Mr. Ryan reported it to me.

MR. TOULMIN: We object.

THE COURT: You may have an exception.

Q14 What did you do next? A. Took it up with patent counsel, Fish, Richardson & Neave.

Testimony of Victor Cobb.

Q15 After that what did you do next? Did you instruct your patent counsel to send a notice of infringement to anybody? A. We instructed our patent counsel to send a notice of infringement to Albeko Shoe Machinery Corporation.

Q16 Just why did you have that sent to the Albeko Shoe Machinery Corporation?

MR. TOULMIN: We object.

THE COURT: This is merely cumulative of what we had this morning.

MR. LYMAN: It goes a little further, Your Honor. The notice that was sent is the one which was delivered, copy of which was delivered to—

THE COURT:—Mr. Williams.

MR. LYMAN: To Mr. Williams.

By Mr. Lyman:

Q17 Following that notice, what happened? Following the sending of that notice of infringement to the Albeko Company what happened? A. We received a letter which came to my personal attention asking if we would receive and talk with Mr. Bruno Kath, of the Albeko Company.

Q18 Mr. Kath is here?

MR. TOULMIN: We object, Your Honor. Let them produce the correspondence.

THE COURT: I think since there is an objection we have sufficient to bring it right to the attention of the Williams Company, haven't we?

MR. LYMAN: Yes, but I want to go further, Your Honor. I want to show Mr. Bruno Kath, of the Moenus Company, who is here in court, came on to see Mr. Cobb. I told Your Honor in opening certain things. I told Your Honor that after this charge of infringement was made to the Albeko Company Mr. Kath, the Moenus representative, came out to see the United Shoe Machinery Corporation and said they had made a mistake, that they had overlooked the McFeely patent, and asked what could be done about it, asked if they could have a license; that the license was refused for good and sufficient reasons by the United Shoe Machinery Corporation; that thereafter arrangement was made by the Moenus Company—They said "Suppose we arrange to withdraw all the machines from this country, will that avoid your suing us?" and that the United Shoe Machinery Corporation said "O. K." to that; and that they then reported that they had offered to the Williams

Testimony of Victor Cobb.

Company to take these machines back. I submit that is all pertinent. That is the remaining testimony which I desire to elicit through this witness, with the full correspondence on the subject. It seems to me it is highly pertinent.

MR. TOULMIN: If the court pleases, this issue was before the court in Paragraph 9 of the bill of complaint, which avers these facts. I made a motion to strike and the motion was sustained as to Paragraph 9.

THE COURT: You mean that in the original bill of complaint this phase was pleaded?

MR. TOULMIN: Was pleaded, Paragraph 9. I made a motion to strike and it was stricken by the court under date of an order of July 21, 1937.

THE COURT: Well, I think here, in view of the statement that the manufacturer is not interested in this litigation, that—Well, how does it become relevant, since they are not a party here?

MR. LYMAN: It is relevant to the equities in this case, Your Honor.

THE COURT: If they were a co-defendant there would be no question about it.

MR. LYMAN: But here is a concern, the Williams Company, which, so far as any evidence in this case is concerned, may be only one of a dozen manufacturers who are using this Moenus equipment in this country. It may be, so far as the evidence is concerned, that the Moenus Company is operating in this country.

THE COURT: Aren't we speculating there?

MR. LYMAN: No, Your Honor. We want to prove that,—We want to show this court and any other court that ever has to pass upon this case that we sue the Williams Company for the reason that the Williams Company is the only concern that is using this kind of machine, that there are no others in this country, that we have to sue the Williams Company, that that is the issue.

THE COURT: I know, but I think we are going beyond the limits there. I think it must be plain we are going beyond the limits there. If you have any evidence, of course, showing the interest of the manufacturer and want to make them a co-defendant, whether you have the ability to do it or not, that would be one thing; but I don't see how, in view of the set-up of this case here, if Williams were defendant and made the opening statement that the manufacturer has no interest in this case, I don't see how it becomes relevant—certainly not as an admission against interest, because they are

Testimony of Victor Cobb.

not in the case. I can appreciate how it helps your case but still it must be relevant.

MR. LYMAN: It seems to me that if it helps our case then it is relevant.

THE COURT: It would help your case against the manufacturer.

MR. LYMAN: I am not relying, if Your Honor please—I may state on the record now that I am not relying upon the fact that the Moenus Company offered to remove these machines as being any evidence citable against this defendant on any issue of infringement or validity. I am simply trying to get this whole picture to you so the court may see how this case arose and the narrow limits within which it is concerned, and that we may avoid any implication we have picked upon some particular defendant when we might have sued a manufacturer.

THE COURT: But to accomplish that you would not like an erroneous ruling on the evidence in the case.

MR. LYMAN: Coupled with my statement now made on the record that that evidence is not to be used as proof or will not be relied upon as any evidence citable against this defendant on an issue of validity or infringement, it does seem to me it is pertinent.

THE COURT: No, I am afraid here it becomes—You see, defendant has the right to rely upon any conduct of his as being binding or not binding upon him, but he certainly cannot be bound by the statement of somebody who is not a party in interest here, and that there is no relation at all other than the fact that the defendant purchased these machines from him. I am satisfied on that. I don't think that we need to argue that matter because to me, as I say, the admissions of the Moenus Company would not be binding, on the showing of the case up to now, on the defendant, and I think it would be thoroughly erroneous if we receive any evidence on that subject.

MR. LYMAN: I presume that in order to save my rights I ought to make an offer of proof according to the rules.

THE COURT: That is all right. You dictate to the record what this witness would answer if he were allowed to answer. That is all right.

MR. LYMAN: I offer to prove through this witness that at a conference had—

MR. O'DONNELL: —Can't that be done later?

Testimony of Victor Cobb.

THE COURT: No, I think this is the time for counsel to proffer what the witness would say. I think we should have that in the record. If you have that in the form of a document why not have it identified and say that is what would be offered if it were permitted to be offered.

MR. LYMAN: I have some correspondence. I offer the correspondence with a brief statement of what the witness would say.

THE COURT: That is all right.

MR. LYMAN: I offer to prove through this witness that at a conference between him and Mr. Bruno Kath, of the Moenus Company, in February, 1936, the Moenus Company requested the United Shoe Machinery Company for a license under the patents in suit; that they were denied that license; that they then requested or asked if it would be satisfactory to the United Shoe Machinery Company if they would remove from the country all the machines of this character which they had made, and that the United Shoe Machinery Company replied that if they did that the United Shoe would not prosecute them for past infringement; that they agreed to do that and specifically agreed to remove the Williams machines; and that there was correspondence between the Moenus Company and the United Shoe Machinery Corporation regarding this subject, of which copies will be produced, and I will ask that they be marked for identification, all this under Rule 43 of the Rules of Procedure.

MR. TOULMIN: May I ask what you are going to proffer?

MR. LYMAN: Here is the correspondence.

The correspondence so produced by counsel for plaintiff was marked for the purpose of identification as follows:

Plaintiff's Exhibit No. 12-a, photostatic copy of a letter of January 30, 1936, from Albeko Shoe Machinery Corp. to United Shoe Machinery Corp.

Plaintiff's Exhibit No. 12-b, copy of letter of January 31, 1936, from United Shoe Machinery Corporation, Patent Department, by Victor Cobb, to Albeko Shoe Machinery Corporation.

Plaintiff's Exhibit No. 12-c, copy of letter of February 5, 1936, from United Shoe Machinery Corporation, Patent Department, by Victor Cobb, to Mr. Bruno Kath, Patent Engineer, Moenus Maschinenfabrik A. G. Frankfurt, A. M. Germany.

Testimony of Victor Cobb.

Plaintiff's Exhibits No. 12-d, photostatic copy of letter February 28, 1936, from Maschinenfabrik Moenus A. G. to United Shoe Machinery Co.

Plaintiff's Exhibits 12-e and 12-f, two pages of letter (copy) March 11, 1936, from United Shoe Machinery Corporation, Patent Department, by Victor Cobb, to Maschinenfabrik Moenus A. G.

Plaintiff's Exhibit No. 12-g, photostatic copy of letter (undated but bearing stamp as received April 22, 1936) from Maschinenfabrik Moenus A. G. to United Shoe Machinery Corporation.

Plaintiff's Exhibit 12-h, copy of letter July 2, 1936, from United Shoe Machinery Corporation, Patent Department by Victor Cobb to Maschinenfabrik Moenus A. G.

Plaintiff's Exhibit 12-i, photostatic copy of cablegram from Moenus to Harlow M. Davis, United Shoe Machinery Co. (stamped as received on July 20, 1936).

Plaintiff's Exhibit 12-j, letter July 20, 1936 from Maschinenfabrik Moenus A. G. to United Shoe Machinery Corporation. (Photostatic copy)

Plaintiff's Exhibit 12-k, photostatic copy letter July 28, 1936, from Maschinenfabrik Moenus to United Shoe Machinery Corporation.

Plaintiff's Exhibit 12-l, copy of letter March 26, 1937, from United Shoe Machinery Corporation, Patent Department by Victor Cobb to Maschinenfabrik Moenus.

Plaintiff's Exhibit 12-m, photostatic copy letter April 13, 1937, from Maschinenfabrik Moenus to United Shoe Machinery Co.

MR. LYMAN: The correspondence referred to is marked for identification Plaintiff's Exhibits 12-a to 12-m, inclusive, in accordance with Rule 43 of the Rules of Civil Procedure.

THE COURT: You haven't lost anything. You have reserved your exception and you have your proof in there, but the ruling is, to keep the record straight here, that for reasons of their own they may have offered to do this but that wouldn't, I say, prove one way or the other whether defendant was guilty in the instant case of infringement.

MR. LYMAN: Your Honor understands I did not offer it for that purpose.

THE COURT: I understand you are simply offering it to account for the fact you are not suing the manufacturer; is that right?

Testimony of Vietor Cobb.

MR. LYMAN: That is right, and that there are none other of these machines in this country except what the Williams Company has.

THE COURT: Of course, that is not in issue in this case, in view of the fact you pleaded it originally and it was stricken from the record. So far as you are concerned, you have made your proffer.

MR. LYMAN: That saves our record.

By Mr. Lyman:

Q19 One more question, Mr. Cobb. Has there been any other infringement to your knowledge of these patents that we have here in suit by any one other than this Moenus?

MR. TOULMIN: I object.

THE COURT: The objection will be sustained.

MR. LYMAN: May I say, Your Honor, that that goes to the question of public acquiescence in the patents, which is always, I think, important.

THE COURT: I say on that subject the fact that you acted promptly in this instance covers that phase of the case.

MR. LYMAN: That is all, Mr. Cobb.

MR. TOULMIN: No cross-examination.

Thereupon Mr. Cobb retired from the witness stand.

MR. LYMAN: It is noted that the correspondence that was produced in connection with the offer to prove is marked Plaintiff's Exhibit 12 for identification. I would like, with your permission, to supply photostatic copies of those documents.

MR. TOULMIN: Very happy to have you do so.

The copies referred to were produced during the course of the trial of the cause, were substituted for the documents originally produced, and correspondingly marked.

Thereupon,

Peter C. McNulty,

called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Examined by Mr. Lyman:

Q1 Mr. McNulty, what is your name, please? A. Peter C. McNulty.

Q2 How old are you? A. Fifty-seven.

Testimony of Peter C. McNulty.

Q3 Where do you live? A. Milwaukee, Wisconsin.

Q4 You are a mechanical engineer by training, aren't you, Mr. McNulty? A. Yes, sir.

Q5 You have a degree in Mechanical Engineering from Vanderbilt University? A. They call it Bachelor of Engineering for a four-year course.

Q6 You have been engaged for a good many years now in engineering work in connection with patent litigation; is that correct? A. Since 1923 exclusively.

Q7 And that work has involved, I suppose, mainly the comparison of structures as regards patent questions? A. The preparation of charts and models.

Q8 Comparison of structures? A. Comparison of structures, testifying in mechanical engineering.

Q9 Mainly having to do with mechanical details, I presume? A. Yes, sir; one or two electrical.

Q10 You have had some experience in electrical as well as in mechanical engineering? A. Yes.

Q11 You have testified as a patent expert in many cases? A. Yes, sir.

Q12 You have made a careful study, have you, of the McFeely patent in suit No. 1,558,737, and also of the Hoyt patent in suit, No. 1,508,394? A. I have.

Q13 You are also familiar with the plaintiff's heel seat lasters, the Model A and the Model D? A. Yes, sir.

Q14 Seen them operate? A. I have seen the Model D operate. I have seen the Model A go through its cycle, but I have never seen it in commercial production in a shoe factory.

Q15 You have been at various shoe factories to see the Model D, which is the present model, in operation, haven't you? A. Yes, sir.

Q16 Several of them? A. Yes, sir.

Q17 At different times? A. Yes, sir.

Q18 Seen them operated on different kinds of shoes? A. I have seen them operated on women's shoes, the Model D. I have seen the Model E operating on men's shoes.

Q19 You have heard Mr. Ryan's testimony with reference to the defendant's machine that he saw at the Williams factory in Portsmouth? A. Yes, sir.

Q20 And you have examined this machine, defendant's machine, which is present here in the hall in the court house; you saw it this morning, did you? A. Yes, sir.

Testimony of Peter C. McNulty.

Q21 Now I would like you first to explain, if you will, the structure shown in the McFeely patent in suit using, if you have them, enlarged drawings of that construction and confining yourself as much as you can to the particular features with which we are concerned in this case. Will you do that? A. May I step down, Your Honor?

THE COURT: Yes.

A. I have enlarged the patent drawings and I have applied colors to the parts to enable them to be more closely followed in connection with the structure. I think it might be helpful if I put the two charts on the easels here.

THE COURT: All right.

A. (After placing two charts on easels): I will refer first to the McFeely patent in suit.

Q22 Before you start answering my question, Mr. McNulty, will you please state whether you have examined the Model A heel seat laster which is in evidence, Plaintiff's Exhibit 4, and whether it is made in accordance with the McFeely patent? A. I have examined it and it is in accordance with the McFeely patent in suit.

Q23 The drawings from the McFeely patent were very likely made from the McFeely structure?

MR. TOULMIN: We object.

THE COURT: Yes.

Q24 Go ahead and explain the McFeely patent. A. I have put on the easel Sheet 1 of the patent, which is a side view of the machine, showing the right-hand side of the machine as you stand facing the machine, and in that view I have applied a violet color to the members that adjust the wiper and tacker mechanism on the right-hand side of the machine. Your Honor will remember from an examination of the Exhibit 4, I believe it is, the Model A machine, that in that machine the wiper and tacker adjustments were individual, one for each side of the machine. I have also put a lead-line to the violet-colored parts and have put the words "Manual Adjustment for Wipers" on the chart. Could these be, or do you wish them to be marked?

THE COURT: I was going to suggest now that you mark them.

A. Each one as I refer to it?

THE COURT: Each one as you refer to it, and just check with the reporter as to the number and she can initial it, because you will want to use them in the Court of Appeals.

Testimony of Peter C. McNulty.

Thereupon counsel for plaintiff offered in evidence enlargements for the six sheets of patent No. 1,558,737 to McNulty, and the same are made part of this record, marked as follows:

Plaintiff's Exhibit No. 13, Sheet 1.
Plaintiff's Exhibit No. 14, Sheet 5.
Plaintiff's Exhibit No. 15, Sheet 2.
Plaintiff's Exhibit No. 16, Sheet 3.
Plaintiff's Exhibit No. 17, Sheet 4.
Plaintiff's Exhibit No. 18, Sheet 6.

A. What I have been referring to so far has been marked Exhibit 13, Sheet 1 of the patent. I will now continue with reference to that exhibit. I have colored a sepia color the parts which control by hand the adjustment of the heel band mechanism as shown on this Exhibit 13; and I have put a lead-line to the colored part and the words "Manual Adjustment for heel band." I have applied a very light green color to the portion of the jack post upon which the shoe is mounted, and have put a lead-line and the word "Jack" at that point. I have also put a lead-line and the word "Shoe" leading to the shoe. I have applied a tan color to the tackers shown in this view and have put a lead-line and have put the word "Tackers" there. I have put a lead-line to the cam and marked it "Cam," which is shown near the right-hand side in the upper part of the chart. In the center track of the cam I have applied a dark blue color, and to the roller on the slide shown at the bottom I have also applied a dark blue color. This color again appears near the top portion of the sepia color of the hand adjustment for the heel band. This, as I will explain later, is the slide for moving the tackers and wipers by power.

I have applied to the front portion of the cam member which is shown as 174 an intermediate color, a darker green than on the jack, and have also applied the same color to the rod member associated with that cam, which appears at the point where I am extending my pointer on the chart. I have applied a dark brown color to the portions which are acted upon by the cam, as shown in this chart, for actuating the shoe member, and that is the jack member that holds the shoe after it is in position. These are a long lever with the figure 170 on it and its associated parts connecting down to the jack and on down again to near the bottom of the machine,

Testimony of Peter C. McNulty.

where the reference character 190 shows. Then at the bottom of the machine I have applied the light green color to the treadle 202 and have put the words "Jack Treadle" with a lead-line, indicating that when you step upon that treadle you are then acting on the same jack force at the top.

Now I would like to go to another one. In Sheet 2 of this patent which, enlarged, has been marked Exhibit 15, you find a sectional view through the machine somewhat like Figure 1 except cut in section and showing a longitudinal section through the machine. In this chart you will find the same tan color has been applied to the tackers and the word "Tackers" has been put on. You will find the light green color again appearing on the jack member, and I have applied the same color to the hold-down, 200, to which I have also put a lead-line and the words "Hold-Down." Just below the hold-down is a view showing the wiper plates, and I have put the words "Wiper Plates" with a lead-line and a light blue color showing where the wiper plates are. I am pointing to it now. I have again applied the dark green color to the portion that actuates the hold-down, beginning with the cam roller and cam bar that acts upon the roller and the arm upon which the roller is mounted. These are shown in dotted line in the center of the machine, but I colored them to show what their location is, also on the rod extending forwardly to the front part of the machine which carries a rack, to which the same color has been applied. This rack engages the pinion 210 to which the spindle has been applied, and this rack engages the hold-down 200. In the center of the cam member is the track that actuates the dark blue bars or the bars to which I have applied the dark blue color, that actuate the wipers through their power cycle, and I have applied a lead-line and the word "Cam". And the cam—Your Honor understands that this is simply a cylindrical cam with a number of tracks cut in, the center one being a box cam track. In the upper right-hand portion of Exhibit 15 is the hold-down, 200, enlarged, and I have put the word "Hold-Down" and applied the same color to it.

What I have said so far relates to the tackers, the means for holding the shoe, and the wiper plates and the parts for actuating the wiper plates. While I am on this chart I will explain the color application to the hold-down bars also, but before doing that I will say I have again applied the brown color to the parts connected with the cam, which in the power cycle will act

Testimony of Peter C. McNulty.

upon the jack, which holds the shoe. I don't need to go through those in detail because they are clearly shown on the chart, but I would like to say that, in addition, the brown color has been applied to the slide member which actuates the parts, by power, for closing the heel band. And Your Honor will notice that by coloring the dotted parts acted upon by the cam you will see a bell crank lever which has an arcuate tooth portion at one end which engages a pinion which in turn has on the other end a smaller pinion that engages a slidable member on its top portion. This member has rack teeth on its bottom portion and those rack teeth in turn engage a bell crank lever having teeth on one of its arms, of which this lever 180 is the member which actuates the parts that act upon the jack, so that during the power cycle of the machine the jack is acted upon by the brown members and the heel band closing portion is acted upon by the brown members. I will show that better in another view later on. I have colored in this chart the heel band a very dark green and have applied the words and the lead-line to the part, calling it "Heel Band." I have also applied a dark red color to the adjustable member back of the heel band, which is acted upon by the sepia color in the other drawing for the manual adjustment of the heel band, and I have applied the dark red color to the connecting clip between the heel band and this back adjusting band.

THE COURT: That is the wing nut that was sawed off in the Williams machine?

A. Well, change "wing nut" to "clip". They apparently did not have a wing nut; they had another sort of a nut. But they did have a slotted clip there and they sawed that off.

THE COURT: I see.

A. At the center of the brown member which I explained had rack teeth on the top and bottom, you will see a red color. This red color is surrounded by a spring, and the brown parts transmit their power to the red member through the spring shown in this drawing; and at the forward end of the red member we will see in another view how it acts to drive the yellow parts in front of it, shown in this drawing.

Q25: What are the yellow parts, Mr. McNulty? A. The yellow parts are the parts associated with the heel band mechanism for actuating them under power. I did not intend to go into that part in detail until later.

Testimony of Peter C. McNulty.

Q26. I thought when you mentioned yellow parts it would be well to explain what that meant. A. I wanted to go through the wiper parts.

THE COURT: All of this testimony refers to—What is that?

A. Exhibit 15. I started out with that. I first referred to enlargement of Sheet 2, which was Exhibit 15, but this ties it up again. In the enlargement of Sheet 3 of the patent, which is Exhibit 16, we find a plain view of the parts which illustrate the wiper and tacker arrangement. I have taken the liberty on this exhibit of breaking away the tacker base part, 280, to illustrate the parts behind it, which are shown dotted in the patent. I have also done the same thing to other tacker parts at the end and to the front portion of the tacker portions at the corners, which enable us to show the wiper blades more clearly.

Q27 Mr. McNulty, just there you referred to certain wipers which you called "at the corners". Will you make it plain what you referred to as the corner wipers in that case? A. Part 288, shown at the two corners between the ends and the side wipers, are the parts that I am pointing to, and these are the parts that I referred to as the corner tackers.

Q28 Corner tackers I should have said, instead of corner wipers. A. Yes.

Q29 And I believe the tacker at the end of the bight is called the end tacker, is it, in the patent? A. Yes, sir.

Q30 And what are the tackers which are in front, at the front end of the cavity for the heel on either side?

A. They are called side tackers, and you will find I have placed the words on the chart to bring that out.

Q31 Otherwise you might think when he spoke of "corner tackers" it would be these here (indicating).

Go ahead, Mr. McNulty. A. By referring to the patent drawing, Your Honor will see that the parts broken away in the center of the tan portion are shown solid in the patent and the spring is shown dotted in the patent. I have simply broken the parts away and at the side tackers I have broken away as illustrated on the left side, and on the two corner tackers I have broken away along the wavy lines shown, that I am pointing to.

Figure 12 on this chart shows one of the tacker members 288, which are the corner tackers, and I have put the words "Corner Tackers" with a lead-line leading to them, on both sides, I have also put the side tackers

Testimony of Peter C. McNulty.

on both sides, with the lead-line and "Side Tackers." All of the tacker parts on this drawing have been colored brown. Beginning at the top of Figure 3 you will see in the center that number 226. I have put the words "Cam Roller" there, and I referred in another exhibit to the dark blue roller which is on the slide 224. I have marked this slide "Wiper Slide Block" and have colored it dark blue, as shown in this view. At its lower edge—I say "lower edge" merely because the chart is in a vertical position and we are looking at a plan view; but at its front end it carries rack teeth which engage with teeth in the arm of the bell crank lever on each side, and the rack teeth are on each side. The bell crank levers are colored dark blue, and on the right side I have put the words "Bell Crank Levers" with a lead-line leading to it. These levers are in engagement on their other ends by connection to gears 274. The left-hand one is shown. The right-hand one is cut off. The gears 274 engage the rack teeth on top of the member 276. This member has also been colored dark blue. So that during the power movement the power is transmitted through the dark blue parts, to the main slide and the connections into the bell crank levers, to the gears 274, and to this plate 276. I have put a light blue color on the wiper plates and have put lead lines and the word "Wipers" to indicate the wiper plates themselves. The wiper plates are pinned together and are capable of effecting a swinging movement with reference to the dark blue part by means of the arguate guideways that I am pointing to with a pointer now.

Q32 Can you point to the pivot there? A. The pivot is right there (indicating). By means of the members connected to the outer ends of the wiper plates, which are links 284, which in turn are connected to a slide member 266, the wiper plates may be adjusted when the dark blue part is standing still. I have applied a violet color to the parts which relate to the movement between the dark blue and the wiper plates during this manual adjustment. You will notice over at the left-hand side I have put the words "Manual Adjustment for Wipers" with a lead-line, and the way that works is that at the outer end of the member 276 there is a rack. If that member is stationary and you rotate the pinion 268 on it by means of the hand actuated parts 265, you will drive forward the violet member 264 and in turn you will drive forward—that is, if it is rotated inwardly, you will drive inwardly the blue wiper blade on that

Testimony of Peter C. McNulty.

side of the machine. The base of the side tacker on that side, 280, is colored tan, and in it there is a slot. Also, there is a set-screw, or a clamping screw, which has no number, but its function is to unite the side tacker at that point to the violet member 264. I have applied what we call a bronze green color to that, to make it stand out. And the parts are maintained during all movements after the adjustment and during the adjustment by means of this shiny green member in the set-up relationship; that is, there is no movement between the base of the tacker member and the adjustable slide member 264, no relative movements between those two parts because of this member.

The corner tackers are associated with the wiper plates—and I am pointing now to the one on the left-hand side. They are associated with that one by means of a spring 290, which forces the tacker member inwardly; and I am pointing now to a plate 294 in Figure 12 which is at the bottom of the tacker member, and then I will point to that plate in Figure 3 to illustrate how it engages the back of the wiper blade so that movements of the wiper blade will be followed by the tacker member due to the backward motion of the wiper blade compressing the spring, and then in the opposite direction the spring moves to make it follow forward. The end wiper, the base of which shows the lead-line 232 and the cross-section part 234, does not adjust during the adjustment of the other wipers. As is easily seen from this drawing, if you actuate the violet parts with the dark blue part stationary, the tan tacker members at that side and that corner, that is, 280 and 288, will follow whatever movement is impressed upon the slide block 264, the link 284, and the wiper blade on that side, which does not seem to have a reference character there, in its preliminary adjustment. Then during the power movement of the machine the violet parts, the tan parts, and the dark blue parts will all move, but the end wiper will not move during the preliminary adjustment. Now, this end wiper is shown in section. I think I have referred to all of the figures on this chart except Figure 10. Before leaving it I will refer to Figure 10. At the bottom of the chart is a developed view of the cam drum, and I have applied colors to the cam rollers shown to indicate the tracks which act upon the same colors of the parts in other parts of the machine. In the center of the dark blue cam roller 226 is the one that actuates the wiper parts. At the one side of the cam, which

Testimony of Peter C. McNulty.

would be at the rear, the dark brown roller 121 is shown and as I explained in connection with the other exhibits what its functions are, I won't repeat it. At the forward portion of the cam another cam roller, 171, is also colored dark brown, and its functions in connection with the actuating of the heel band mechanism, both of them will be explained later in connection with another chart. At the extreme forward part of the cam I have applied the intermediate green color to the roller 221, the member which actuates the light green hold-down member in the machine. In case Your Honor is not familiar with the layout of a cam drum—

THE COURT: Oh, I think that seeing it on all the machines—

A. —You don't want me to explain it?

THE COURT: No.

A. The arrow shows the direction of rotation and the flat parts are the direction in which the parts stand still. When you come to a sloping portion of the cam it immediately begins to move and, as you will see where I am putting my pointer, from here to here I have gone through one movement of the wiper. There would be the inward movement and the retraction here, which gives your second wipe; and the retraction there gives the partial advance wipe, then a period of rest and a retraction. So that by following these curves on this chart you get the timed sequence of operation; and every member acted upon by the cam in one cycle of rotation is in timed relation in its movement to the other parts by means of the curved portions shown on the cam.

THE COURT: The half-wipe, that is shown right before the end.

A. Right there (indicating), and at a point like that the tacks will be driven. These have not been laid out in degrees but from the point at the left-hand to the extreme point at the right-hand end—

THE COURT: —That chart is supposed to cover a full cycle.

A. Yes, 360 degrees, as if you had split the cam, or put a piece of paper around it to mark these tracks and spread it flat—

THE COURT: That is the full cycle.

A. That is the full 360 degrees cycle, and you will understand in this machine one cycle of the machine handles all of the operations power operations, and then the machine stops. For the next operation of course you have to start it again.

Testimony of Peter C. McNulty.

In the chart of Exhibit 13 the pedal at the bottom is the one you step on.

THE COURT: That puts it into operation. That covers a full cycle and when it completes the cycle it automatically stops.

A. Yes, and during that movement—I will mention it but I won't go into it, because Mr. Lyman said to confine my talk to the portions at issue—Your Honor will note in the machine the cam which acted to trip the tackers. That is in the center there, 318 in Exhibit 15.

THE COURT: Yes.

A. But I did not think it necessary to go any further into that portion of it. That part receives its power from the same part that actuates the machine.

At this point a short recess was taken, after which Mr. McNulty resumed the stand and testified further, as follows:

By Mr. Lyman:

Q33 Go ahead, Mr. McNulty. A. I would like now to refer to Exhibit 14, and I think perhaps if I work from this easel over here it is easier for you to see. In Exhibit 14, which is an enlargement of Sheet 5 of this patent, Figure 5 is a general view of the parts which actuate the wipers, and underneath it is shown the heel band with the presser members and its levers. Figure 6 is a view of simply the heel band and the slide back of it, which is referred to as a rack slide, and I have put the words "Rack Slide" alongside of it. I have put "Heel Band" near the heel band, and put "Slotted Clip" with a lead-line leading to part 52, which is the clip near the bottom. I have applied the same colors, dark green to the heel band and dark red to the rack slide, that I have referred to before. In Figure 5 I have applied dark blue to the wiper slide, also to the wiper slide block, and also the words "Cam Roller" to the cam roller, with suitable lead-line. Then the wipers bear the number 254, and I put the word "Wiper" with a lead-line leading to that. And I have also applied the violet color to the connecting links 284, which connect with the side tacker section.

Section 8 is a view of a small portion of the tacking mechanism in the front end of the tacker, to which I applied the tan color, which we don't need to explain or go into.

In Figure 7 is shown the end tacker, and I put the words "End Tacker" there, and I applied the tan color

Testimony of Peter C. McNulty.

to the tacker itself, and it is the rear guide member which is guided in the slot shown in the block 224. I am pointing to that portion in Figure 5 now to illustrate where the parts that I am pointing to in Figure 7 would be located. The block 224 is shown and partly broken away, parts broken in section. I have applied a dark blue color to those parts. In the left side of this figure is the wiper plate 254, to which I have put the word "Wiper" and applied the light blue color.

Q34 Just a minute. The portion which you see at 254 in Figure 7 is this portion, the side portion of the wipers which you see in Figure 5? A. You can see from where I am pointing to, at the inner side of Figure 7, which would be this point in Figure 5 (indicating), there are no section lines, but back of that are section lines, which represent the part that I am pointing to and also represent—Well, I had better show it in Figure 5, because it has been broken away for the purpose of illustrating the relationship between the dark blue member and the light blue wiper plates by which they have their swinging movement. Your Honor can see the groove in the dark blue part engaged by a depending lip of the light blue part, and this is the pivot point I refer to, so if the dark blue part were stationary and the ends of the light blue part were actuated upon with an inward or outward movement, there would be the swinging movement of the wipers either when the dark blue was stationary and the violet members moved or when the dark blue was moved and the violet members and the tan members also moved to the side of the machine.

Now this end tacker, as shown in Figure 7, is driven by the dark blue part by means of a spring 238, which receives the movement of the dark blue part and transmits it through a pin 240 to the end tacker member 234. And the specification explains that there may be an obstruction that would occur some time when the advancing movement caused the end tacker to hit a piece of leather that was a little too hard, and consequently if it hit such an obstruction where the driving force was stronger than the spring 238, there would be something like a safety valve action there that would prevent damage to the part. But it says that in the normal operation the tacker will move with the slide and simply have a longitudinal movement backward and forward of the machine. So that up to the part I have now described you would have in this machine the positioning

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of the shoe in the heel band and you would have means by which the wiper plates could be adjusted manually and you would also have an additional power actuated member to carry them through the cycle of closing the wipers and the tackers, being connected with the wipers as I have explained, would follow into the positions that they assume for tacking purposes. And the movement of these parts was illustrated to you on the Model A machine this morning and would be just what you saw in that machine.

I will further refer on this Exhibit 14 to the parts shown which relate to the heel band mechanism, and then I will go to another chart that will in detail show the heel band mechanism. We have at Figure 5 the parts to which I have applied a dark green color, which represent the heel band, and we have presser plates at the outer edges of the heel band and at the upper portion of which I have applied a dark orange color. These presser plates are pivoted members 84, which in turn are mounted upon a pin that extends down through a yellow block shown in this part (indicating), and at the bottom is the wing nut which you have seen several times in this case. I have applied the orange color to the wing nut and the presser member. Carried by this wing nut and pin is a supporting clip 74, to which I have applied a dark purple color. I pretty near ran out of colors on this, so I had to use shades of colors. And connected to press the sides of the heel band inwardly at the proper time are members that I will refer to on another sheet, but on this chart the lever 78 is shown, and I have applied a yellow color to it. It has a rod connected to it, 96, to which the yellow color is applied, and also a spring around it, 100, to which I have applied a lighter orange color.

May I now have Sheet 4, please? (After another drawing was placed on easel): Sheet 4 has been enlarged and is Exhibit 17. This sheet is a section through the machine in the horizontal plane so that you can look down onto the parts that actuate the heel band mechanism, and if you will refer back for a minute to Exhibit 15, Your Honor will see, where I am placing my pointer, that if we cut through the machine at that point and look down on it—

THE COURT: —Like we have here (indicating Exhibits 8-a and 8-b).

A. Yes—we will begin to see what is shown by Sheet 4. Now in this view (indicating Exhibit 17) I

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have applied the same colors that I have heretofore described, and I will refer to the legends that I added onto the patent drawings simply to make it a matter of record. At the top the power driven slide for the heel bands is the dark brown slide member 130. That member, if Your Honor will remember, is the member that I said had top and bottom rack teeth in it, shown in Figure 1, and the member 120 is the part that leads back to the cam that actuates the parts under power. And the power comes through the brown parts to this dotted spring member in the center and then is transmitted to the red member which I have marked, with a lead-line, "Operating Member," to the part 134. Now in the wiper parts the forward movement of the slide block actuates the wiper members through its power cycle. In this one, if you follow through, we will see that movement rearwardly of the part, the dark brown part, would compress the spring on the stud, would drive the red nut backward, would drive the red operating member backward, and would bring with it these side rack members 136, which I have colored yellow, and they, being connected through the teeth to the bell crank levers 138, would turn those levers in a counterclockwise direction and would produce a motion inwardly at the outer end of the heel band.

Q35 Turn the left one in a counterclockwise direction and the right one in a clockwise direction. A. Correct. I happen to be on the left side of the exhibit. And both of them are marked—the one on the right side is not marked but it would, being on the opposite side, rotate in the opposite direction. So that you would get an inward movement at each side of the heel band. Your Honor will see again the lever 78 I referred to in the previous exhibit, which would be 16, and this rod 96 with the spring around it. And in this patent you not only have the spring in the slide member 130 but you have additional springs adjacent the forward ends of the heel band and the power is transmitted to the spring through a member that I have colored a lighter orange, so that there is a yielding application of power in the closing of this band. The patent describes the member 134 as the equalizing member, so that if one side of the band should come against the shoe first, the motion would continue until the other side also engaged the shoe, and then the springs would be sufficiently compressed so that when they were finally compressed there would be a locking of the members in

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place by means of parts shown.

THE COURT: That unyielding part is not shown there, is it?

A. It is not, but during the closing—You are talking about the unyielding part in the Hoyt patent?

THE COURT: Yes.

A. We will come to that later.

THE COURT: I say it is not shown. There is just a faint outline of it there.

A. During the application of power up to its maximum stroke you have the yielding of this spring, but this patent describes that when this—

THE COURT: —That is before the unyielding comes into play?

A. It exemplifies a lock here.

THE COURT: Yes, I understand. I was just trying to get how that works.

MR. LYMAN: Hoyt substituted an unyielding connection there (indicating on Exhibit 8-A).

MR. TOULMIN: This is Hoyt, Your Honor (indicating Exhibit 8-A).

THE COURT: This spring in here.

A. I see. In Exhibit 8-A the witness yesterday explained that there was a spring which would enable them to have the motion that I am now describing by actuating one side, so that if in the opening of the band something should stick or hit the wiper it wouldn't break the part. That is why this movement is provided, but in the closing pressure, to close the band, you would not have the spring in Exhibit 8-A. That is the spring member 100 in Exhibit 17. What I wanted to go ahead and explain is that at the end of the closing movement in the McFeely patent he provides means to lock those members during the wiping action. I didn't apply any color to them—I didn't have any colors left; but they show as white. The block is 144, and the little pointed pivoted detents that come down in connection with them, which are spring pressed up against the arm 78, they automatically lock until the machine has driven its tacks, and then they unlock.

We will first finish the reference characters that I have added, or the names that I have added onto this patent drawing. I have put "Manual Adjustment for Heel Band" for the handle to part 92, and to the shaft 86 which leads into the dark red rack slide at the center, which is the supporting member for the parts that we referred to in another view. In fact, it is the member I

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am pointing to in Figure 6 of the patent as shown on Exhibit 14. So that if you adjust this member you get the "fore and aft", as Mr. Lyman refers to it, movement of the heel band part preliminary to the power movement. I have applied "Pressure member" to one side of the orange pressure members at the side of the heel band. I have applied the word "Jack" to the light green parts and "Toe Pad" to the toe pad parts of the jack, as shown in the plan view of this drawing of this exhibit. I think that is all the legends that have been put onto this chart.

During the adjustment of the part 64 we find that the heel band is permitted to slide relative to the presser members at the upper forward edges of the heel band and to the supporting clips at the bottom of the heel band. The patent shows the clip 74 as the U-shaped member which comes around and is apparently in Exhibit 14 at the inside lower edge of the heel band. So that here we have in the heel band portion a manual adjustment for the heel band by permitting the edges of the band to slide with reference to the presser members and the forward supporting clips during the preliminary adjustment for different sizes of shoes. And then after that we have a power movement which closes the heel band and holds it during the other power movements. And we have had the cycles of this machine so completely explained in this suit I don't think it is necessary to take time to go into that again.

THE COURT: No.

A. Because I don't understand there is any dispute about it.

MR. LYMAN: He will tell you later.

A. If I don't describe it he can't tell me.

MR. TOULMIN: You go ahead and testify, Mr. McNulty.

A. All right. I didn't want to go into anything that had been gone into too far. Before I go to Figure 6 we might sum up the two groups of mechanisms that we have referred to before by saying that in the tackers and wipers we have in combination with the supporting means for the shoe the preliminary adjustment of the wipers, we have a subsequent power movement over the shoe in which, both the preliminary adjustment and the power movement, the tackers are carried in such position that when the wipers move they move all except the rear tacker in that machine. It will move in the power movement but not in the preliminary adjustment move-

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ment. And we have the means for maintaining the tackers and the wipers in their position as secured by means of the shiny green unnumbered nut that holds the side tacker in place and by means of the spring member that holds the end tackers in place, and an adjusting nut at the back of it which I did not refer to but which is clearly shown in one of the figures.

In the heel band mechanism we have the preliminary manual adjustment of the heel band for sizes, during which adjustment the heel band is free to move with reference to the pressing members and to the supporting clips; and then we have the power movement which, by power, applies the yielding pressure to the side of the heel band during its closing movement.

(Placing another drawing before the court): Now may we refer to Sheet 6 of this patent? Sheet 6 has been enlarged and marked Exhibit 18. It is the view of the parts without the supporting mechanism of the machine shown, and in the upper left-hand corner we have the cam drum, and on this one I have put the words "Hold Down" and a lead line. That is the hold-down (indicating), to which I have applied the light green color. I have put "Adjustment to Vary Vertical Movement of Hold Down" to a nut bearing against the lug 208, and I have applied a similar color to the rod on which it is mounted, which extends back to the arm 220, which I have colored an intermediate green color. Its roller 221 is shown engaging the cam track 274, and I have applied the same color to that part. I have also applied that same color to the rod 218 which has a rack on its front end engaging a pinion 214 on a shaft 212 which has a pinion 210 on it which engages a bar 216. It is this mechanism that is vertically moved when that part of the cam is actuated—Your Honor will see that, the dark brown part of the cam 121—which is the bell crank lever 120, which has a rack on it engaging a pinion 124, which in turn engages a pinion 128, and actuates the dark brown slide 130 that has a rack on its top side. I have applied the dark brown color to all of these parts.

THE COURT: Those are all movable parts without the support.

A. These parts have just been put into their operative connections to illustrate more correctly how the power is put through the machine.

MR. TOULMIN: Something like a skeleton.

A. Something like a phantom view in a photograph, where they retouch it and make parts stand out

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and the stationary part is very light. You will see on the bottom of the slide 130 a rack which engages a tooth rack on the arm of the lever 180, and as you follow down through that—I have applied a dark brown color to all of these parts—you will see how the power is transmitted to finally a shaft 162 that has a pinion, that is, a pawl and ratchet teeth on it, so that by means of turning that shaft you may actuate a slide bar 160 with rack teeth in the bottom of it, and that outer end of the rack bar clamps onto the jack post; and you have heard several times how the power takes hold of the jack and pulls it in and puts pressure on the back of the band. Well, this is the part through which it puts the pressure on the back of the band, this slide bar 160. Then you will see on the same end of the lever 180 a vertical rod 190 that I am pointing to which, through a yoke and a spring transmits its power on down, and then by causing the parts to open it picks up again in the lower portion of the jack frame and continues down to actuate a rack through a shaft 152 with pinion teeth on it. 194 actuates a rack 154 on the parts that I have applied the light green color to leading up to the jack post 148. And you have heard in the previous description how the jack post is not only pulled in by power but lifted by power, and this gives you a visible illustration of how that lifting effect is obtained.

This illustration also shows the shoe and last, in which the shoe has been broken away to illustrate the upper portion of the jack with a pin on it, which the last sits on, and also with the hold-down 200 is engaged with the outer part of the insole to firmly hold the shoe and position it in its proper position. So that this movement of the shoe with reference to the vertical plane in which the wipers act is under control by means of the parts that I have just referred to, and in this Exhibit 18 I have applied a dark green color to the hold-down portion as shown. I have applied an orange color to the presser plates at the upper outer ends, that is, the upper parts of the outer ends of the hold-down on each side; I have applied a yellow color to the portion of the lever showing the tacks upon the presser members; and I have applied a purple color to the clip shown. I have also applied a red color to the members 70 surrounding the heel band which are shown in Figure 6, Exhibit 14, within the spring member 68. This is a flat spring, arcuate in form, which is secured to the part 64, and inside of it are these pads 70, which are shown in

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Exhibit 18 that I am pointing to, surrounding the upper back side of the heel band, also in Exhibit 14 between the light blue presser plates and the dark green pad. Now I will mention the upwipe feature briefly, merely as one of the functions—

Q36. —The upwipe claims being out, I don't believe it is necessary, unless the court wishes it.

THE COURT: Those two are out of it.

A. They are out. I merely wanted as part of my illustration to indicate that in the vertical movement of the shoe in reference to the horizontal plane of the wipers the silver parts shown in this drawing are adjusted, and one of the reasons for it in the patent was to vary the extent of vertical movement, and one of those variations would be in connection with the upwiping. But in order to initially position the shoe such an adjustment might be used in connection with an additional adjustment on the rod 218. And again, in the chart where the development of the cam drum is shown at the bottom, Exhibit 16, Sheet 3 (placing another chart on easel), I am pointing now to the intermediate green roller 221 at the bottom of Figure 10, and when the curve moves the roller downwardly as I am doing, the hold-down would move downwardly into the machine. Then you notice the flat part, and during that flat part, if you go into the dark blue cam track, you will see that as the hold-down moves downwardly the dark blue wiper portion is in its cycle of operation. In order to get the exact timing with reference to one another of these parts they should all be lined up on a different drawing showing their position at zero and then as you went by, you see, you could see how they operated.

THE COURT: I can follow that.

A. But what happens is that between the first and second wipe—and I will go through again—this being the first wipe, between the first and second wipe the hold-down is lifted up in order to bring the shoe nearer to the plane of the wipers for the second wipe, it being better to have the shoe positioned further away from the wipers during the initial breakdown operation. That is illustrated by the upper curve in the lower track on Figure 10. If you should adjust the nut ahead of 208 in Exhibit 18 sufficiently to effect the movement of the hold-down so that it would prevent too much lifting of the shoe, then you could adjust for the purpose of lifting exactly the amount that you wanted to between wipes. Perhaps I will go over that again to make it a little more clear.

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THE COURT: No, I watched that very closely. I think that I—

A. —That is, that adjustment, if varied the full throw shown on the cam, would not let the roller go in at all. If you went in not more than the lift-up between wipes you would then be varying that portion. If you went in equalling that you would then be varying the other part of the hold-down which is in the upwipe wipe.

At this point a recess was taken until ten o'clock in the morning of the following day, Thursday, January 19, 1939.

MORNING SESSION

Thursday, January 19, 1939.

Pursuant to adjournment the hearing was resumed, counsel being present as heretofore noted.

Thereupon,

Peter T. McNulty,

resumed the stand and testified further, as follows:

DIRECT EXAMINATION

By Mr. Lyman:

Q37 Mr. McNulty, you have prepared enlarged copies of the Hoyt patent, with which you can explain the Hoyt construction, can you not? A. Yes.

MR. TOULMIN: Before the witness proceeds, I would like to advise the Court, that yesterday afternoon at the request of counsel for the plaintiff, we gave them an opportunity to photograph our machine, and we furnished them our mechanic, who has been here to dismantle the machine. I understand they took extensive photographs. I want the record to show our position in this matter; I want Your Honor to understand that we made this disclosure voluntarily, but no copies of the photographs have been furnished us as yet.

Q38 That's correct, Your Honor; of course, the photographs haven't yet been received. The answer to that question is yes, then? A. Yes; may we mark them now?

MR. LYMAN: Let's mark these large copies of these drawings in evidence, before you proceed. I will offer in evidence as plaintiff's exhibit 19, the enlarged copy

Testimony of Peter C. McNulty (Resumed).

of the drawings of the Hoyt patent in suit, sheet 1; as exhibit 20, the enlarged copy of sheet 2 of said drawings; as exhibit 21, the enlarged copy of sheet 3 of said drawings, and as exhibit 22, the enlarged copy of sheet 4 of said drawings.

And the enlarged colored charts, so offered in evidence by counsel for plaintiff, of Hoyt patent, 1,508,394 are made part of this record, marked as follows:

Plaintiff's Exhibit 19, Sheet 1, Patent No. 1,508,394, to Hoyt.

Plaintiff's Exhibit 20, Sheet 2, Patent No. 1,508,394, to Hoyt.

Plaintiff's Exhibit 21, Sheet 3, Patent No. 1,508,394, to Hoyt.

Plaintiff's Exhibit 22, Sheet 4, Patent No. 1,508,394, to Hoyt.

Q39 Now, Mr. McNulty, will you proceed to explain the construction of the Hoyt patent in suit, in so far as concerns the particular mechanisms with which we are here concerned? A. In sheet 1 of the patent enlarged as exhibit 19, I have applied colors to the same general parts that I applied in the enlargement of the McFeely patent, as explained yesterday. On this particular chart, the heel band, 140, has been colored dark green, and the words "heel band," have been added. The tacker portions have been colored light green, and the word "tacker," added. The clip supporting the forward end of the band is shown in this view, and it is colored dark purple. Also, the wing nut is colored orange. The adjustable supporting member at the rear is shown and a dark red color has been applied to it. As will best be seen from another exhibit, at the top of this supporting member are two loosely mounted arms, which are shown down here in sectional view, but no number applied to them, and I have colored those pink. The tacking units of this Hoyt patent are colored tan and the hold-down in front of the tackers, which is 256, has been colored light green. The parts shown in this view which actuate the hold-down, have been colored a darker shade of green, and the parts which control the mechanism to close the heel band, and also which operate to pull the jack in, have been colored dark brown, in the same general manner as in the preceding patents. The

Testimony of Peter C. McNulty (Resumed).

dark brown transmits its power to the spring, which, in turn transmits its power to the red member in the center of the dark brown part. The forward portions of the light red member, 190, are connected with the red part, 192, and at the top, is the equalizing member, better shown in another view, marked 188. They have been colored a carmine red. This patent, Your Honor, shows the application of a number of tacks on to the outsole part of the heel section of the shoe, as shown in sheet 4, in figure 6, by the dotted members between the hold-down part and where the shoe would be. Inasmuch as there are no bodily swinging wiper plates, I have applied no dark blue color to those; I just made them a part of the tacker unit.

On exhibit 21, which is sheet 3, I have applied a tan color in the plan view to members of the tacker unit, to illustrate where they would be in there, moving into tacking position. In exhibit 21, Your Honor, a plan view, also, of the hold-down part, to which I have applied a light green color. Then in figure 8 on this sheet, which is a fragmentary view through the heel end of the last, showing a part of the heel band, 140, which I have colored dark green, a portion of the hold-down, 256, which I have colored light green, and then this outsole, C, is shown in section, and the last with its insole, its upper front over the heel end, is also shown, the insole being B. To the No. 94, which is fastened on the bottom of the tacker, I have applied a tan color. That moves as a part of the tacking unit.

In exhibit 22, sheet 4, enlarged, figure 4, shows a section through the tacking unit to the forward end of the heel band. I will refer for a minute to exhibit 20, sheet 2, enlarged, so that we can see where that section would be, and it would be where I am placing my pointer, at the forward end of the operation of the heel band. Then in exhibit 22, sheet 4, in figure 6, we find another section, in sectional view, through the heel end and the tacking unit, which would be at the point I am pointing to, on exhibit 20, in sheet 2, in figure 2, of the patent. I have applied a tan color to the tacking portions shown, a dark red color to the adjustable member connected with the heel band, which is the supporting unit; a pink color to the loosely mounted arms, which are mounted at the top end of that member and dark green to the heel band, orange to the presser members, yellow to the members which move the presser members, which I have referred to on another sheet, purple to the clip that supports the

Testimony of Peter C. McNulty (Resumed).

forward end of the heel band, and orange to the wing nut at the bottom end of the presser member. This is better shown in section in figure 4, where I see the orange part is shown as it goes down through a like support to the purple clip, which is at the bottom of the heel band which is colored dark green in this view. I am going to change easels and get two charts.

Sheet 2, enlarged, exhibit 20, shows a plan view of what would be directly above the heel band closing mechanism. Beginning at the top, I have on this chart, broken away, a small portion of the power driven slide member, to illustrate how the stem of the operating member extends through, with the spring around it. I have also broken away the housing member, 132, in which the springs are located, two spring presser members, and have simply illustrated the spring in there.

In this embodiment, the power is transmitted from the main cam, through the arm, 200, to a power driven slide, 194, and that power is used to close the heel bands through the spring 192, and forwardly to an operating member, to which I have applied a carmine red color, the operating member being No. 188. I have also put the words, "operating member," alongside of this, with a lead line. That's correct; the operating member is called the equalizer. In fact, the power is transmitted to the presser members from the operating member through the parts 184 and 186, which I have colored yellow, which have racked teeth on their forward ends, and as they move, they transmit motion through connecting arms, 176 and 178, which are connected through bell crank levers with the teeth on one end, the bell crank levers being 176 and 178, and the motion is then transmitted through the parts that I have colored yellow, to the presser members, to which, I have applied an orange color.

The legend "connections between operating member and pressure members," has been applied to the bell crank lever, 178. The legend "heel band," has been applied to the heel band, 140, which has been colored dark green, and the legend "spring pressed plates on loosely mounted arms," has been applied to the plate, 246, pivotally mounted on the arms, 240 and 242. I have applied a pink color to those arms and to those presser members. The arms, you will remember are mounted on the supporting members, which I have referred to in exhibit 22, on the forward parts of the support which is dark red, shown best in figure 6 of exhibit 22. These

Testimony of Peter C. McNulty (Resumed).

spring press plates, as I term them, 246, are acted upon by members 248 and 250, sliding in yoked arms, 232, with the springs behind them. The members, 248 and 250, come against the ends of the arms, 242 and 240 to press the plates, 246 and 244 against the corner of the bight, as the patent says, of the heel bands.

That's all the yielding connections referred to, and the ones at the forward ends of the heel bands are termed in the patent as unyielding connections. And, the connections from the equalizer, or operating member, 188, and the presser members, which are racked at the forward end of the heel band, and then through other contacting plates marked 168, that being this little shoe or bar against the sides of the heel bands, are styled connections in the patent, and unyielding between the operating member, 188, and the presser members. Now if we follow the motion backward, assuming that the heel band is to close, from the position shown in exhibit 20, the arrangement of the presser members, would be to move inwardly, and consequently, the opposite bell crank lever on arm 168 would have to move rearwardly, and the motion rearwardly would be transmitted through the spring, 182, to the sliding block 194 and back to the cam; that being the opposite of the opening action.

Now, the yielding corner pressures, looking at the bight of the band, are transmitted through the members, spring press members, 248, 250, and I have applied a golden color to those members through the pink arms, to the presser plates, 246 and 244. Those are the parts that are called the loosely mounted arms, on the supporting member. Now, we have means in this patent for adjusting the initial position of the heel band by means of a part in figure 20, extended in dotted lines as I am now pointing to, to which I have applied a sepia color. It is like exhibit 8-A, the part that I am actuating, to show the motion transmitted to the heel band operation.

In this patent, we have clips, by means of which the heel band is supported at its forward end, so that there can be a sliding motion between the heel band and the supporting clips, which, as I am pointing to, in exhibit 20, is the violet member, or the purple member, 164, and at the same time you get the sliding movement between the heel band over to the presser plates, 168, at the side of the heel band, at the back of the band, fastened to which is a slotted clip, 242, to which I have applied a dark red color, and it is supported upon the same member that the loose pink arms are supported on, that

Testimony of Peter C. McNulty (Resumed).

being the pin member, 144. That member is, in its shape, somewhat similar to the orange member that I am pointing to at the top, 154, but it is formed with a shoulder in the main supporting member, so that while it has directly an upward movement, its downward movement is limited by the shoulder in the sliding supporting member, 146. And, at the top of the loosely mounted arms, immediately underneath, it is on back supporting member, 236, which is also mounted on that same pin, on this same support. That member has a part, 234, which is shown on exhibit 20, that I am pointing to, directly behind the center portion of the heel band.

So that, when you press backwardly into the heel band, the heel band is supported in its backward movement, by the back stop, 234, which, in turn, is a part of the main supporting member of the heel band. So that, here, we have heel band members against the shoe, with what the patent terms unyielding connections between, an operating member and a presser plate, and yielding connections at the bight of the band, called the back, which are the spring members. And, we also have supporting means with the band, which are the supporting clips, 142, that is, one slotted clip, the front supporting clip, 164, and the back support, 234, which is the support at the back of the bands against rearward movement during operations, when the jack is pulled in hard.

By Mr. Lyman:

Q40 I should like you to show the Court, Mr. McNulty, those operating mechanisms which you have described in connection with the patent in suit, appearing in the model A machine. You have had some photographs made, haven't you, of those exhibits, 8-A and 8-B? A. Yes, I have.

Q41 The model A, is just like the McFeely, that's the testimony; the model A has some refinements. I would like you to produce those photographs. I think perhaps also, you have colored some photographs? A. Yes, I have.

Q42 That will tie up with the other exhibits? A. Yes.

Q43 First, let's have some of the uncolored photographs?

MR. TOULMIN: May we see them a second?

MR. LYMAN: Yes, but let's see if he can verify these.

A. The first photograph that you hand me is a front view.

Testimony of Peter C. McNulty (Resumed).

THE COURT: Perhaps it would be better to wait until Mr. Toulmin looks them over.

A. We will get you a set of them. It is simply a question of the mechanics of getting them together, and so on.

MR. LYMAN: Let's mark these collectively as plaintiff's exhibits 23, sheets A, B, C, D, E and F, respectively.

MR. TOULMIN: I would like to have the record show that we make the same objection to these exhibits that we made to the physical exhibits of the other photographs, so that the record will be clear on that point.

THE COURT: All right; they will be received, subject to the same objection.

The six photographs so offered in evidence by counsel for the plaintiff, are made part of this record, marked as follows:

Plaintiff's Exhibit 23-A, Photograph, Plan view of Exhibit 8-B.

Plaintiff's Exhibit 23-B, Photograph, Top view of Exhibit 8-B, plates removed.

Plaintiff's Exhibit 23-C, Photograph, Bottom view of heel-band portion of Exhibit 8-A.

Plaintiff's Exhibit 23-D, Photograph, Plan view of Exhibit 8-A.

Plaintiff's Exhibit 23-E, Photograph, Front view of Exhibit 8-B.

Plaintiff's Exhibit 23-F, Photograph, Bottom plan view of Exhibit 8-B.

By Mr. Lyman:

Q44 I have asked you about some colored photographs. What are these enlarged colored photographs which you have produced? A. I have enlarged colored copies of exhibits 23, B, C, D, E, F. I have no colored copy of exhibit 23-A, and I produce a binder which you can mark enlarged colored copies of the exhibits, which I have referred to, 23, B, to F, inclusive,—not exhibit A.

Q45 These are some enlarged colored copies,—are they? A. Yes, the uncolored ones are on those other sheets.

MR. LYMAN: I will offer in evidence this group of colored photographs, as plaintiff's exhibit 24, containing five colored photographs.

MR. TOULMIN: May the record show our same objection?

THE COURT: Yes.

Testimony of Peter C. McNulty (Resumed).

The binder of colored photographs, of model D heel seat lasting machine, so offered in evidence, by counsel for plaintiff, is made part of this record as Plaintiff's Exhibit 24.

Q46 Will you proceed, Mr. McNulty, to explain what these photographs show? In the first place, they show the construction of the model D machine, do they?

A. May I first explain what the uncolored ones are, by the numbers you put on them?

Q47 Yes? A. I think perhaps you have picked the one that is a duplicate view. These are marked 23-A and 23-B, instead of which, I have in my colored charts a front view of exhibit 8-B, which you haven't put in as one of the uncolored ones. Might it be better to substitute for 23-B, the front view of exhibit 8-B, instead of two views of exhibit 8-B, which are duplicates, except for the direction in which the pictures have been taken?

MR. LYMAN: We should like to do that, Your Honor.

A. (Continued) These two are the same, you see, except that this one is a little better view of it. This is the one, Mr. Hammett? (Indicating)

MR. HAMMETT: That's the one you want?

A. Yes, the front view of exhibit 8-B; you have several of them there uncolored.

MR. HAMMETT: I think we have a complete set now.

A. (Continued) That's the one; Mr. Ryan has one in his hand.

Q48 This is the one, for which we are substituting this one here? (Indicating) A. These are the two. Instead of that one, we ask that this one be substituted. (Indicating) No, I was wrong, you did have as E, an exhibit of the front view of 8-B. What I have in my colored charts of the first sheet, is a combined view of the two exhibits, which you didn't put in. So, I suppose we had better put that one back and put the other one in, because it is a duplicate. Now, in the uncolored exhibits that we have, 23-E, is a front view of exhibit 8-B. 23-A is a plan view of exhibit 8-B, with the cover plates removed. 23-F is a bottom plan view of exhibit 8-B. Exhibit 23-B, is another top view of exhibit 8-B with the plates removed, but with the center block member which is shown in proper position in 23-A, to connect the ends of the bell crank lever, removed. Exhibit 23-D is a plan view of exhibit 8-A. Exhibit 23-C is a bottom view of the heel band portion of exhibit 8-A.

Testimony of Peter C. McNulty (Resumed).

In the binder of colored drawings, exhibit 24, the first sheet is a front view of exhibit 8-A mounted upon exhibit 8-B. Now, if you have the exhibit numbers, will it be all right if I put an arrow and a lead line on 8-A and 8-B, to indicate on this first sheet, which is which?

Q49 Yes? A. I am placing a lead line with this arrow to the top portion, which represents the tackler and wiper portion, and putting exhibit 8-D indicating that portion. At the bottom part I am putting a lead line and an arrow, I mean a lead line, and marking exhibit 8-A at the bottom portion. On this first sheet I have applied a tan color to the tacklers, and immediately under the tacklers, I have applied a light blue color to the wipers. I have applied a green color to the heel band, leading to the supporting clip member shown at the back of the heel band, also leading to the yoke arm on which the springs are mounted, that presses the mounted arms against the corner heel bands, and gold to the part of the spring pressed by the spring against the arms. I have applied orange to the parts below, and the clips supporting the front end of the heel bands, —yellow to the parts which press the orange parts against the forward end of the heel bands and purple to the parts associated with the wiper plates, which adjust them by hand adjustment preliminarily.

I have also put a legend on as follows: At the left-hand side, "manual adjustment for wiper on left;" at the right side, "manual adjustment for wiper on right." Those are the ends, to which I have applied a purple color. I have also put a legend at the right upper portion, "manual adjustment for wipers." Understand, too, Your Honor, like in this model A machine, they have in addition to the individual adjustment, in the model A machine, its equivalent at each side, and there is super-imposed another adjustment, represented by the wheel, which I have now marked, "manual adjustment for wipers," that adjusts two of them simultaneously.

MR. TOULMIN: These drawings all have legends. Don't they speak for themselves, without having that in the record?

THE COURT: As far as I am concerned, but it may be that the witness and counsel have some object in view.

MR. LYMAN: I think we ought to have them in the record for the Court of Appeals, and perhaps for this Court when it considers the case.

Testimony of Peter C. McNulty (Resumed).

THE COURT: Those legends speak for themselves and are easily understood, but if counsel wants this for the record, that's their business.

MR. TOULMIN: I don't want to take too much time on it, or worry the Court about it.

A. I can close it up by saying that I have applied the same colors on the same parts, in the other drawings.

THE COURT: So far as I am concerned, that's all right.

A. Suppose I first explain what each sheet is. The second sheet in exhibit 24, is a front view of the exhibit 8-B; the third sheet is a bottom plan view of exhibit 8-B; the fourth sheet is a top plan view of exhibit 8-A, and the fifth sheet is a bottom plan view of the heel band portion of exhibit 8-A. And, in order to tie up the sheets with the explanation just given, I will mark 1, 2, 3, 4 and 5 on the sheets in the order that they are, and you will find them in there, marked exhibit 24. On all these sheets I have applied the colors, and have put the names on the parts, putting the same colors on the same parts, that I have formerly referred to, in explaining the Hoyt and McFeely patents. I understood, however, that perhaps counsel wanted me to point out specifically in here what these parts were, which I will be glad to do.

MR. LYMAN: Just a moment, Mr. McNulty. We have here one of the small photographs corresponding to the third sheet of exhibit 24, and I will ask that that be included in exhibit 23, sheet G.

• The photograph so offered in evidence by counsel for the plaintiff, a plan view of Exhibit 8-B, is made part of this record, marked **Plaintiff's Exhibit 23-G.**

MR. LYMAN: Now, the question has been raised apparently, as to whether our model D machine is really an embodiment of the claims in suit of the McFeely patent. I want to get that straight, and I would like to get an answer as to just what procedure applies in such a case. First, I could ask this witness to take claim 6, for example, and point out the elements that appear in that claim, in this model D machine. Or, I could ask him where in the model D machine, he finds this element and that element, if he finds them. I will await Your Honor's judgment as to how that should be done, but I do want, either by argument or by the testimony of the witness, to show Your Honor now, that the

Testimony of Peter C. McNulty (Resumed).

model D machine is the embodiment of all the claims in suit in the McFeely patent, that it only has refinements over it.

MR. TOULMIN: In the first place, it is not in issue here, as to whether they built the machine within the patent. The issue is, whether we built a machine within the patent or not. For that reason, the question of whether this model D is their embodiment or not, is immaterial. They have produced model A, which is their machine, and has been built and produced. That's sufficient. They didn't even have to do that, in order to have a good patent. That stands on its face as good, until we knock it down. For that reason, I can see no reason for taking any further time on the issue of whether or not they have built various models within their patent. We will never get through with this case in that way. We are now on the fourth day of this hearing, and I must protest against that method of procedure.

MR. LYMAN: May I ask if you admit that the exhibit, that the model D machine, is within the McFeely patent?

MR. TOULMIN: I do not, and I say that question has no place in this law suit, and we are objecting to it.

MR. LYMAN: I will call the Court's attention to claim 6. Let's first consider that the Court will have before it the tacker and wiper adjustment, and if Your Honor will have in mind claim 6, as I proceed to question the witness, I will ask him to point out in these photographs where the things referred to in that claim are found, if they are to be found.

MR. TOULMIN: I have another objection I want to make before the witness enters the province of the Court. The Court is to construe the claims. The claims are solely for the Court's construction. Now, if the witness here is going to interpret those claims, then he is usurping the function of the Court, that has been traditionally reserved for the Court.

THE COURT: No, I don't know that he is doing that. He is simply pointing out and verifying the claims from the exhibits before him; that's the object of it.

MR. LYMAN: That's all, Your Honor; of course, it is for Your Honor to interpret the claims; there is no question about that.

THE COURT: But the question has been raised now as to whether the model D, and the exhibits here, do embody the McFeely claims. Since the defendant does

Testimony of Peter C. McNulty (Resumed).

not admit that, then, of course, the plaintiff wants to put evidence into the record that the exhibits here, and the model D, are in accordance and within the elements of the McFeely patent. Isn't that the purpose of it?

MR. LYMAN: That's just the purpose.

MR. TOULMIN: Very well, when we come to the prior art, and the question of infringement, we will follow the same procedure.

THE COURT: That's up to you. It is their version of it. Counsel has prepared their case, in accordance with their version and view of the case, and the Court has no disposition to interfere with it. He would much rather, for the benefit of the Court of Appeals, that you would present your case in accordance with the way you have worked it out in advance. There is no disposition here, unless some serious question arises, to interfere with that plan. Is that plain?

MR. TOULMIN: Perfectly plain, Your Honor, I shall proceed on that basis when I come to our case.

By Mr. Lyman:

Q50 Speaking of this model D machine, the model D heel seat laster,—we are talking about that machine. Now, Mr. McNulty, will you say whether on that machine there are end lasting wiper plates for closing over a last bottom? A. Yes, as shown in sheet 2 of exhibit 24, those are the blue parts:

Q51 And in that machine are there manually operable means for adjusting determinately the position of those wiper plates, so as to initially position them to act on the marginal portions at the end of the shoe upper on the last? A. Yes, you have the detail parts in exhibit 24.

Q52 Are there means in that machine to effect bodily and swinging movement of the wiper plates in it to wipe the marginal portions over the bottom of the last? A. Yes, that's the power driven slide which acts upon the wiper plates, which in sheet 3, of exhibit 24, is shown as a dark blue member.

Q53 Do they have a bodily and swinging movement? A. The slide transmits its motion to the light blue wiper plates, to cause them to move forward bodily, and at that same time, to swing inwardly. If Your Honor will look at sheet 2 of this, you will see, extending down over it a corner of the light blue part.

THE COURT: Yes, I have seen that.

Testimony of Peter C. McNulty (Resumed).

A. (Continued) In sheet 21, at each end of the light blue wipers, you will see a pin colored light blue extending down into the pawl part.

THE COURT: Yes.

Q54 Now, in this model D machine, do the tacking units which co-operate with the wiper plates, have means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of the plates? A. Yes, they do.

THE COURT: Perhaps we can shorten this some. Instead of going over the whole business, perhaps Mr. Toulmin will point out where the claims and the exhibit, model D are not in accord with the patent, and give the plaintiff that information. I mean, if you will point out specifically where you think they have failed instead of compelling them to go over the whole of this, then they can just center their testimony on that.

MR. TOULMIN: I have already made that statement on the record, in connection with the objection to model A and model B and model D out in the other room. And it is for that reason that I made the statement, and I think it is complete in the record. And, I would like to stand on that statement. If we wish to shorten the matter, I will make this suggestion, without prejudice to our case, because I am willing to co-operate. If counsel wishes to have Mr. McNulty state that he finds in claim so and so, all the elements of that claim in that machine, that it is just the same,—that's perfectly agreeable to me as a quick way of getting at it.

A. (Continued) Before I finished that last answer I should have said, in the exhibit uncolored, which shows over the top of exhibit 8-B, with the covers off, you will find the transmission on the dark blue mechanism, which operates the slide.

Q55 I think it would be well to have on the record, an express statement for the record,—a brief statement, as to where each of the elements are found. May I call your attention to claim 23, the next claim,—does this model A machine have a substantially U-shaped flexible clamping member that embraces one end of a last and shoe upper? A. Yes, that's the heel band member colored dark green in exhibit 24.

Q56 And means to support the last and shoe upper with one end positioned within the clamping member? A. Yes, that's the jack part.

Q57 Has it a movable adjusting member connected to the lower edge of the clamping member at its rear

Testimony of Peter C. McNulty (Resumed).

closed end? A. Yes, on exhibit 24, on sheet 4, the dark red part acted upon by the sepia part, constitutes the mechanism for doing that.

Q58 Has it means to support the lower edges of the clamping members on opposite sides? A. Yes, it has the clip for that purpose, which is shown in sheet 1.

THE COURT: I think the answer that it has, is sufficient.

Q59 Has it pressure members arranged to engage the opposite sides of the U-shaped clamping member and press those sides inwardly to force the end of the upper in close conformity to the last? A. Yes, it has.

Q60 Has it manually operable means to move the adjusting member to slide the U-shaped clamping member relatively to the pressure members? A. Yes sir.

Q61 Has it means to operate the pressure members to clamp the shoe upper and the end wiping mechanism to wipe down the edges over the bottom of the last? A. Yes sir.

MR. LYMAN: Well now, since Mr. Toulmin has suggested that we put a general question in order to shorten the proceedings, let me then, follow Mr. Toulmin's suggestion.

MR. TOULMIN: I was just trying to expedite matters.

Q62 Yes, I understand. You have compared, have you, Mr. McNulty, the claims of the McFeely patent in suit, numbers 6, 23, 42, 85 and 91, with the plaintiff's model D machine, have you? A. Yes sir.

Q63 Do you find that the subject matter of the claims, of those claims, of that patent, are embodied in this model D machine or not?

MR. TOULMIN: We are objecting, if Your Honor please. May I have it noted that our objection is running along to all this testimony?

A. I find them embodied in the model D machine.

Q64 In all cases? A. Yes sir.

MR. LYMAN: You are not objecting to the form?

MR. TOULMIN: Not as to the form; I would tell you so if it was to the form.

THE COURT: Of course, counsel for the defendant is making his points here, I assume to tie them in with his defense, as to this question and answer. The defendant has an exception.

MR. TOULMIN: I want to object to all of this evidence, without interrupting the examination, if the Court please.

Testimony of Peter C. McNulty (Resumed).

THE COURT: That will be all right.

MR. LYMAN: I understand then that there is no objection to the form of my question?

THE COURT: It is not quite clear at this time just to what point counsel is objecting.

MR. TOULMIN: I will be very glad to clarify that again. I object to the testimony that has been introduced in this case, with reference to the whole question, including model D; as to whether it comes within the patents in suit or not, because, in my judgment, that is not an issue in this case for determination by this Court; and I therefore, object to putting in testimony that has no bearing upon the determination of the two issues of infringement and validity.

THE COURT: Of course, as I have said, when you put your case in, what you have in mind will more readily appear.

MR. TOULMIN: That's right, Your Honor, and if I were in Your Honor's place, if I may make a suggestion, I would suspend ruling on the objection until you hear my case, or otherwise, just as I make my position plain at that time. That can then be taken up for consideration on the record when I come to the defendant's proof. I will take an appropriate position at that time.

THE COURT: The ruling is the same. The answer will stand and you may have an exception.

A. So far, you have asked me only about the McFeely claims.

Q65 I also intended to ask you, have you compared the model D machine of the plaintiff, with the claims in suit of the Hoyt patent, claims 19 and 21? A. Yes sir, I have.

Q66 Do you find the subject matter set forth in claims 19 and 21 of the Hoyt patent, present in the model D machine of the plaintiff? A. Yes sir, I do.

Q67 I want now to proceed to consider the defendant's machine, Your Honor, with this witness, and those photographs haven't come yet, that Mr. McNulty had made last night? A. They were due here at 11:00 O'clock.

MR. LYMAN: It would facilitate matters if we had those photographs.

At this point a short recess was taken, after which the witness, Peter T. McNulty, resumed the witness stand and testified further as follows:

Testimony of Peter C. McNulty (Resumed).

MR. LYMAN: If Your Honor please, the photographs haven't arrived yet, but we will go ahead without them.

Q68 You have heard the testimony of Mr. Ryan, about the machine that we saw at the Williams plant, and you have examined the defendant's machine in the Court House here, have you, Mr. McNulty? A. Yes sir.

Q69 I am going to ask you to compare the defendant's machine, as you have seen it, and as explained by Mr. Ryan, with the subject matter dealt with in the claims in suit of the McFeely patent. Now, in your explanation, you may assume first that the screw and clip, to which reference has been made, and which are absent from the machine in the Court room and are not in use on the machine, although it appears that they were for some period of time initially; you may also assume that the springs in the pressure members, which in defendant's machine applied pressure to the arms near the bight of the heel band, are in the machine and it appears that they have been taken out from the machine in the Court room, but they were originally in the machine; you may also assume that there was on the machines at the defendant's factory that adjustment for varying the extent of movement of the hold-down, the vertical movement of the hold-down, to which Mr. Ryan testified. For the purpose of your present answer, make those assumptions?

MR. TOULMIN: We object to the question for the sole reason, a vital one to my understanding, that the construction of the claims, as called for by this question is exclusively reserved to the Court, and cannot be gone into by a witness, or an expert witness. We therefore object to the question for that reason.

THE COURT: Well, of course, this witness is an expert witness, and that objection, of course, doesn't apply to the testimony of an expert witness.

MR. TOULMIN: I will be glad to submit authorities, Your Honor, to the effect that it applies to an expert, as well as to any other witness.

THE COURT: Is the question completed,—I mean have you ended your question?

MR. LYMAN: Yes, Your Honor, all I asked of the witness was to compare the defendant's machine with the claims, making those assumptions.

THE COURT: With the assumption that the spring was on the machine, and the fastening on the rear end of the heel band was there.

Testimony of Peter C. McNulty (Resumed).

MR. TOULMIN: My objection goes to that part of his question with reference to the claims. I don't care what the assumptions are, but I object to getting into the question of the claims, with the expert, because that's a matter that the Court has to decide.

THE COURT: Of course, the only way that the Court can decide is by and with the aid of the expert witnesses offered by the plaintiff and the defendant.

MR. TOULMIN: He can testify as to the subject matter, but the conclusions to be drawn from the claims, are reserved for the Court.

THE COURT: Certainly; there is no doubt about that. The question may be answered, and if it becomes apparent that the answer should be stricken, we will consider that later.

MR. TOULMIN: Thank you, Your Honor. I want Your Honor to know that I am not trying to be captious.

THE COURT: Oh! no; as I have said, it is up to counsel to try the case as best they can, the way they see it, and according to their theory of it.

By Mr. Lyman:

Q70 I will ask you first, Mr. McNulty, will you direct yourself first to those claims which I have denominated the tacker-wiper adjustment claims, or the tacker-wiper claims, of McFeely claims 6 and 85? A. Now, Your Honor, in answering that question, I understand that I am asked to point out in defendant's machine, with the assumptions Mr. Lyman made about it, any structure which I understand corresponds to the claimed elements referred to?

THE COURT: 6 and 85?

A. (Continued) And before I answer, for the purpose of the record, may we refer to the specific parts which those assumptions relate to? I understand the clip you are talking about would be illustrated in the McFeely patent, number 62 in figure 6. That was the first assumption.

THE COURT: What sheet is that?

A. Sheet 5, figure 6; the clip number 62,—that's correct.

Q71 That's correct? A. The spring element mentioned second, is in the Hoyt patent and is referred to in the specifications, page 5, line 77, as "spring pressed plungers 248 and 250 seated in bosses on the ends of the yoke 236." So that the spring that you are talking about would be shown in exhibit 20, by the gold spring which I have put in the post 232. I think it might be better to

Testimony of Peter C. McNulty (Resumed).

tie these assumptions up directly with the numbers in the exhibits, so that there will be no misunderstanding about it.

Q72 Yes, your assumption is correct? A. Then, the third assumption that you asked me to make was the member which would correspond to the adjusting nut, shown in sheet 6, figure 9, of McFeely, that bears against the lug, 208.

Q73 Tell me what sheet? A. Sheet 6, figure 9, of McFeely, that bears against the lug 208. There's an adjusting nut on the rod, 222. That's the means in this patent for varying the vertical adjustment of the hold-down member, 200. That's the sheet. On exhibit 18, it is the forward end portion of the silver member, to which the lead line extends and the notation "adjustment to vary the vertical movement of the hold-down." That's the third assumption that I was asked to make. Now, Mr. Lyman, if that doesn't agree with what you meant by your assumptions, let's understand the question?

Q74 What I was referring to in that latter assumption was not the means for varying the original position of the hold-down, but the means for varying the extent of the vertical movement of the hold-down? A. That's the part that I have pointed out.

THE COURT: That's the part that was sawed off later? A. No sir, the part that was sawed off, was the first one I referred to, the clip, 62.

MR. LYMAN: In this Moenus catalog, it is the part which the witness Ryan marked with the letter X, in that Moenus catalog, plaintiff's exhibit 10, at the page marked e.

A. (Continued) You have asked me to refer first to what you call the tacker-wiper claims of the McFeely patent. I would like to refer first to claim 85.

Q75 Very good? A. In claim 85, the claim reads, — "In a machine of the class described, the combination with last and shoe positioning means." The last and shoe positioning means in the defendant's machine would be the jack post upon which the shoe is mounted in brown, with the hold-down member on top. "Of end embracing wipers." These in defendant's machine would be the wiper plates on the machine which have swinging and bodily movement. Next, — "Means for effecting a preliminary adjustment of the wipers to the contour of the shoe." In defendant's machine, there's a hand wheel on the right-hand side of the machine, which is

Testimony of Peter C. McNulty (Resumed).

in the nature of a shaft, having two gears, on which it meshes with two other gears, that operate to move a rack, the teeth of which engage a gear of the vertical shaft. At the bottom of the vertical shaft, is a sector with teeth in it which, in turn, engages teeth in the member that will be called for the purpose of reference a wiper carrier member. That member has engagement with the slide which is acted upon by the cam roller to bodily move the wipers forward, an arcuate engagement similar to what I pointed out on the patent. The light blue parts engage the dark blue parts of the McFeely patent in suit, so that when you turn the end wheel, it would, through the connections I have just described, swing the wiper plate, either in or out, with reference to the supporting blue slide member of the patent, which is the color put in for illustration of what I am talking about. And, in that way, the defendant's machine, effects a preliminary adjustment of the wipers to the contour of the machine. In defendant's machine, whatever the design of the parts consists of, it adjusts the two of them simultaneously. I could point those parts out on the machine in the hall, if you care to have me do so.

THE COURT: No.

A. (Continued) The photographs that we have coming will illustrate the views of those particular parts, so that you can easily follow them. The next part of the claim, is,—“Additional power means for subsequently operating the wipers.” Now, in the defendant's machine, after the end adjustment would take place, as I have just described it, and the machine goes through its power stroke, the cam comes through a track on the cam, on the contact roll, which is fastened into a slide, and that slide is the additional power means for subsequently operating the wipers through the power cycle of the machine. The next part of the claim is,—“And tackers connected to the wipers for preliminary adjustment with them and for power effected movement with the wipers subsequently over the shoe.” Now, the tackers in defendant's machine are connected to the part that I referred to as the wiper carrier, the tacker and wiper carrier,—the tackers being on the top portion of it, and the wiper plate on the bottom portion of it, so that in the machine, the structure is such, that the tacks through the connection, through the wiper carrier, and then to the wipers, are connected to the wipers, and whenever you adjust the wipers, you adjust the tackers. We have a hold-over adjustment,—whenever you move the parts by power, the wipers and the tackers are af-

Testimony of Peter C. McNulty (Resumed).

fect by the power movement, to move subsequently over the shoe.

Now, we turn to claim 6, and claim 6 reads,—“A machine of the class described having, in combination, end lasting wiper plates for closing over a last bottom.” In the defendant's machine, the wiper plates are the portion on the underneath side, of the tacker and wiper, and they are for closing over the bottom of the last. The next part is,—“Manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last.” Now, the manually operable means are the parts that I described in claim 85, which adjust the wiper plates initially before the power movement, if they need adjustment. Then,—“Means to effect bodily and swinging movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened on the bottom of the last.” In defendant's machine, as the power movement starts and moves the slide forwardly, the racks that I mentioned in connection with claim 85, descend naturally, but because the vertical shaft with the pinion on the upper end engages a rack, does move, then the power is transmitted through the slide, the forward movement of the power driven slide, to swing the wiper plates and tackers inwardly, as they move forward, so that we get a structure, which is the bodily and swinging movement. I take it the “bodily,” would refer to the structure that would move forward bodily with the machine, and at the same time swing inwardly as it was moved forward.

Then, reading again from the claim,—“And tacking units co-operating with the wiper plates.” The tacking units are fastened on to the tackers, and carried through to the wiper parts, are fastened to it through the tacking units co-operating with the wiper plates. I think that's plain. “And having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates.” We have the screws fastening the tacker plates, or the tackers themselves, directly to the wiper carrier plates. We also have screws fastening the wipers to the carrier plates, so that the means to maintain them in all predetermined relation to their position of adjustment, is this intermediate plate, to which they are both attached in any adjusted position, and they always stay in that position. After they are once fastened to this wiper carrier plate, they

Testimony of Peter C. McNulty: (Resumed).

are thereby maintained in the same relative position, no matter how you adjust them as a unit.

Q76 Now, will you turn to claims 91 and 23, relative to the heel band? A. Claim 91 is the shortest, so let's refer to that one first. In claim 91, it reads,—“In a machine of the class described, the combination with last and shoe positioning means.” This, as I referred to previously in the defendant's machine, would be the jack post underneath the last, together with the hold-down member that engages the upper portion of the outer insole at the higher portion of the last. “Of an end embracing band for clamping the upper round the lateral periphery of an end of the last.” This, of course, is the heel band member of defendant's machine. “Supporting means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe.” On defendant's machine, near the forward end, at opposite side portions of the band, are clips which extend down in a U-shape and come in underneath another slide in the bottom of the band. So that these clips would be supporting means for the opposite side portions of the band, and would fasten to the band, so that they provide a sliding fit to the band and by that construction are permitted to slide lengthwise of the machine in those clips. The last element is “and means connected to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means.” Now, the clip, 62, in the patent, is the one I refer to as the clip, which is attached to the end portion of the band. The assumption I was asked to make here was, that in defendant's machine, there was a clip, which was later sawed off, the function of which was to attach the end portion of the band to the supporting member. In addition to this part, we have an operative connection between the back end of the band and the sliding adjustable supporting member, that fits in position to be in operation; to push the band forwardly, or, when adjusted back to the heel tacker, pulls the shoe back into the heel band. It allows them to be adjusted back into the band. That finishes 91.

Claim 23,—“A lasting mechanism of the class described having, in combination a substantially U-shaped flexible clamping member.” That's the heel band portion in defendant's machine. “Means to support a last and shoe upper with one end positioned within said clamping member.” That's the jack post upon which the shoe is mounted, that starts the shoe with one end positioned within the clamping member. Next,—“A

Testimony of Peter C. McNulty (Resumed).

movable adjusting member connected to the lower edge of said clamping member at its rear closed end." This movable adjusting member is the block back in the machine which may be adjusted to change the position of the heel band and allow it to slide with reference to the supporting clip for different sizes of shoes, and it is connected to the lower edge of the clamping member that's closed in through the clip. "Means to support the lower edges of said clamping member at opposite sides." In defendant's machine, you have the little U-shaped clips from the bottom presser members to the forward part of the heel band, which support the lower edges of the heel band at the opposite sides. Next, "Pressure members arranged to engage the opposite sides of the U-shaped clamping member at points above its lower edges and to press said sides inwardly to force the end of the upper in close conformity to the last." These pressure members are the pivoted plates, which are pushed in by the mechanism at the outside forward end of the heel band, that press against the upper part to closely form the heel band around the shoe. "Manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members." Now, on defendant's machine, on the right-hand side, you have an end mechanism with a little ratchet pin, that can be adjusted to slide the U-shaped clamping member, so that it will set, or, it is free to slide, with reference to the pressure member on the side.

In this claim, if you will refer back a minute to 91, you will see that in that claim, the slide is with reference to the supporting clip. "Supporting means relatively to which the opposite side portions of the band are permitted to slide," I am reading from 91. Whereas, in this claim it says that the band is to slide with reference to the pressure means. So that where one claim refers to a structure to permit sliding between the band and the supporting means, which supports the lower edges of the band, the next claim permits sliding with reference to the pressure members, at the sides, that are pressed against the band. The next element is,—"means to operate said pressure members to clamp the shoe upper." From the cam, you begin with the power actuating mechanism, which actuates a slide and comprises through a spring and a member that is connected by rack teeth, first, to the member to which the spring is connected and then to each side of that member. They have, extend-

Testimony of Peter C. McNulty (Resumed).

ing forward, bars upon which there are racked teeth and they have bell crank levers, so that through those members, when power is supplied to the machine, you have means to operate the pressure members to clamp the shoe upward. Of course, with means of clamping the heel band against the shoe upward. Then, the last element,—“and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.” Immediately above the heel band mechanism is the wiping mechanism to wipe down the edges of the upper over the bottom of the last, as I explained in connection with previous claims, about the tackers and wipers.

By Mr. Lyman:

Q77 Now, will you take up claim 42? A. In claim 42, we find that it reads,—“A machine of the class described having in combination, clamping means to embrace one end of a last and shoe.” That’s the heel band in defendant’s machine. “End wipers positioned to operate on the edges of the upper at said end of the shoe.” The wiper plates of defendant’s machine are the end wipers for that structure for that element. “A hold-down mounted for vertical movement and positioned to engage the bottom of the last and shoe.” In defendant’s machine, there is a hold-down against which the bottom of the last and shoe are positioned. “A support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down.” The support is the post on the jack which may be swung inwardly, manually, after the shoe has been mounted on it, to position the shoe within the clamping means and underneath the hold-down. “Power operated mechanism effective to move said support forcibly to press the last and shoe against said clamping means and hold-down to actuate the clamping means.” The power operated mechanism in defendant’s machine, to do what this claim calls for, is the structure that will take hold of the jack, press it inwardly against the clamping means, and subsequently actuate the clamping means to grip the shoe, and in that movement, it also presses the last and shoe against the hold-down. “Mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers.” In defendant’s machine, there’s a cam at the forward part of the cam track, which, through a rack and shaft,

Testimony of Peter C. McNulty (Resumed).

with pinions on it, actuates the hold-down to press it down below the plane of the wipers, so that when you make your first wipe, the shoe will be below the plane of the wiper. And, it is in timed relation, because everything on the cam track during one cycle, occurs in some timed relation to everything else on that same cam track, and it is in timed relation to that part of the cam track, which actuates the clamping means, adjusting the heel band part.

The next claim is,—“Mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe.” This mechanism is the part connected with the cam on defendant's machine, to the wiper plates. It has a slide on which the wiper plates are mounted, and a part that I explained in connection with the tackers and wipers, which causes bodily and swinging movement of the wipers, so that this mechanism, when it operates, actuates the wipers to break down the edge of the upper over the bottom of the positioned last and shoe. The next part of the claim says,—“The said hold-down mechanism being automatically operative subsequently, determinately to raise the hold-down.” In defendant's machine, a portion of the cam which actuates the hold-down mechanism later, that is, subsequently, permits the hold-down to rise after the first wipe and before the second wipe, so that mechanism, that part of the cam, which permits the hold-down to rise, will be the structure which subsequently raises the hold-down.

The next element or next part of the claim is,—“The said power operated mechanism being operative substantially coincidently correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers.” This part of the mechanism that extends from the power actuated portion of the heel band, that extends down into the jack part, in the defendant's machine—is the part which acts to raise the shoe last and support, to push it up against the hold-down as the hold-down is raised. This upward motion is supplied to further be sure that it comes up properly.

The next part of the claim is,—“the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last and shoe.” The part of the claim of defendant's machine, which is connected

Testimony of Peter C. McNulty (Resumed).

with the wiper and tacker mechanism through the slide block, is the structure which is operated in timed relation, because of its lugs on the cam track to actuate the wiper to wipe over and compact down the edge of the upper, over the bottom of the shoe. The next part of the claim is,—“Manually adjustable means for determinately varying the amount of vertical movement of the hold-down.”

The assumption that Mr. Lyman asked me to take on the part that was marked in the catalog of the Moenus machine, was that there was an adjustable nut or bolt on the end of the arm, which contacted the back of the arm, upon which the cam roller was mounted, so that it controlled the vertical movement of the hold-down and made the cam track on the cam have a certain definite throw. If the roller takes, you might say, the entire 360 degree cycle, then the arms will move the full amount of the throw of that portion of the cam. If something is interposed to prevent the roller from taking the maximum throw, the entire 360 degree cycle, then the motion would only be a curve of whatever portion of the throw of the cam, the roller was permitted to take with the cam. So that, if you put behind the arm an adjustable mechanism that prevents the arm from travelling the entire, the full distance, you would then have means for varying the amount of the vertical cycle movement on the first wipe, and this adjustment is a bolt, which is manually rotated to make the arm go, that is, to allow the cam roll to go either closer or further away from the surface of the cam during the power cycle of the machine.

Q78. Now, will you turn to the Hoyt patent and compare the defendant's machine with the subject matter of claims 19 and 21 of that patent? A. 21 is a short claim; we will read that first: “In a machine of the class described, the combination of fastening inserting means.” The tacker mechanism of defendant's machine drives tacks, so that they are fastening, inserting means. “Means for positioning a shoe in relation to the fastening inserting means comprising,” and then we have four parts which define this fastening inserting means comprising. The first is,—“a substantially U-shaped flexible band operable to clamp the heel end of the shoe.” That's the heel band operation of the defendant's machine. The second would be, reading on,—“means for supporting the band.” In the defendant's machine we have means for supporting the

Testimony of Peter C. McNulty (Resumed).

band against the pawl, one is a motion vertically and one is a motion horizontally. The first vertical one would be the clip, which, at the rear end of the band, at the lower edge, would contact with the adjustable supporting member. The second one against horizontal movement would be called a back-stop, which I referred to in the Hoyt patent as part 234, the back-stop on the supporting part against which the heel band is driven in the power movement of the cycle to maintain the band in position against the support during the power cycle of the machine.

The next element of the claim, and we are still defining that part up there, which says, means for positioning the shoe,—the third one is,—“devices comprising arms loosely mounted on the supporting means.” In defendant's machine, under the assumption that Mr. Lyman asked me to make, there's a pair of arms, which were loosely mounted on pins in the supporting means, and they came out and have on each end of them, a pair of plates, that is, one plate on each arm, that contacted against the heel band spring, at what they call the bight of the heel band. Those arms would comprise loosely mounted arms. In defendant's machine, there is in each arm, an adjusting screw, which would limit the inward movement of the arm. But the arms themselves loosely mounted on the means pivoted on the arms, after they were pivoted or pinned and held by a key to the pin, if you put a gear to the shaft, and then put a key in it and then fixedly around the shaft, the gear will ride the shaft rods. But if you would loosely mount the gear on the shaft, and don't key the two together, then if the gear would move, the shaft wouldn't move. So, in the combination of the support in the defendant's machine, the arms were loosely mounted, so that when the arms moved, the pin didn't move. But, it wouldn't matter. It would matter, yes, because when the arms are mounted on the pin, the pin would be stationary, and the arms would move. Of course, you have two arms, one above the other on the pin, so that, if either arm was fastened to the pin, the other one could not be fastened to the pin; otherwise, your arms would be locked and not loosely mounted.

The next element of the claim is,—“means normally operative to press said devices against the band.” The supporting member has, on defendant's machine, on the adjustable support, extending portions, or rather, arms extending upwardly with the means to receive a spring,

Testimony of Peter C. McNulty (Resumed).

and a spring press member which acts against the arms, in order to force them against the band, and that would be the means normally operative to press the device against the band.

Claim 19 reads,—“In a machine of the class described the combination of fastening inserting means.” Again, that would be the tackers of defendant's machine. “Means for positioning a shoe in relation to the fastening inserting means,” and then he goes on, “comprising” a definition of what that position is,—“a substantially U-shaped flexible band operable to clamp the heel end of the shoe.” That's the heel band in defendant's machine. Then, “an operating member.” In defendant's machine, we have a member inserted between the slide member, which is operated by the slide and the spring which the slide acts against, the other end of the spring member, against the plate; and the head of the plate, would be an operating member, for actuating the remaining parts, not necessarily the remaining parts of this claim, but for actuating the parts between that member and the presser members at the side of the claim.

So that, the construction in defendant's machine, which is the operating member, is that member that is on the heel band side of the spring, we will say, and that member actuates parts which are connected through racks, the bell crank lever and through the presser members at the front end of the heel band. Now, here's the rest of the structure,—“And unyielding connections between said member and the band for forcing the ends of the band against the shoe.” Now, from that member, through racks and bell crank levers and members acting against the head of the heel bands, you have a train of connections, in which there is no yielding from the operating member to the presser members at the side of the shoe.

The rest of the claim reads,—“and separate yielding means operating on each side of the band adjacent to the bight of the band to press such portions of the band against the shoe.” Now that structure would be the loosely mounted arms which are equipped with presser members to press against the bight of the band at that operation, and spring presser, acting on each arm to forcibly press the members forwardly, or to retain, we will say, the pressing of the bands, which would tend to expand the loosely mounted arms. So that, in all pressures from the shoe at that particular

Testimony of Peter C. McNulty (Resumed).

portion of its pull into the band, you would get a tight pressure from the spring member arm at that point, to force the bight of the heel band tightly against the last of the shoe at that point.

Q79 Now, Mr. McNulty, I want to ask your opinion, as to the effect, if any, which defendant's cutting off of that clip at the end of the heel band, has had, with close regard to the infringement of this claim by this machine? A. The defendant's cutting off of the clip, would, of course, break the physical attachment of the clip to the bottom end of the supporting member, which is adjustable. But it would not, however, prevent the adjustment of the heel band forwardly during the manual adjustment of the supporting member, to permit the heel band to have sliding relationship with reference to the supporting clips, at the forward edges, and presser members at the forward edges. And then, if the manual parts which actuate the adjustable support were operated in the opposite direction, to move the support forward, away from the heel band, as soon as the pressure push was cut off of the heel band, it would immediately permit the sliding relationship of the heel band with reference to the supporting clips to presser members, as it had previously done on the forward movement. And, it might be possible that perhaps the friction on the parts, might pull it back, but at least it would back-action the shoe, push it back, so that through the operative connections and associations between the parts it would get the same result in substantially the same way as though the clip was connected.

THE COURT: It would be as efficient as it was formerly?

A. It might not; there might be times, as was mentioned by some of the witnesses, where the putting of the shoe in, might cause the heel band at the rear end to go up a little bit higher.

MR. LYMAN: I think that's all, if Your Honor please, except that when we get those photographs here and get time to look them over, we want to put them in evidence as exhibits, with the testimony of this witness.

CROSS EXAMINATION.

By Mr. Toutmin:

XQ1 Mr. McNulty, will you be kind enough to turn back to the McFeely patent in suit, and with the McFeely patent before you, I would like to ask you a few

Testimony of Peter C. McNulty (Resumed).

questions about this last part of your testimony on the claims. Like Mr. Lyman, I would like to make an assumption, and when I make the assumption in the question, will you answer the question based upon the assumption. I will say to Your Honor that if you will note the defendant's starting assumption, you will have accurately, in one place, the position of the defendant, and it will save a lot of labor. Let's assume that the defendant's machine has the heel band cut off at the back, as you found in the machine in the hall?

MR. LYMAN: You mean that clip?

XQ2 I mean the clip is cut off? A. You mean the clip, 62, in figure 6?

XQ3 Or, you can assume that the clip is on, but the wing nut is sheared off, so that there is no physical connection between the back of the heel band and the actuating part,—is that plain to you? A. Yes.

XQ4 Now, with that assumption, do you find in the defendant's machine, as called for in claim 91, the last element,—“means connected to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means?” A. As I just explained, the physical connection,—

XQ5 Will you please answer yes or no, and then give your explanation? A. I will answer yes, and explain that in the answer, yes, I construe, “connected,” to be an operative connection, in which it is physically pushed forwardly when the manual part is adjusted forwardly.

XQ6 But you find no physical connection between the two, did you? A. No, I said that.

XQ7 We can take that as settled between us, that far? A. Yes, that's right.

XQ8 If this phrase means a physical connection between the heel band and the actuating means, then the defendant does not have that element, is that correct? Will you please answer yes, or no? A. Might we have a definition of the word “connected” so that I could describe the structure?

THE COURT: I think you should answer yes or no; that's the same thing we had yesterday with Mr. Ryan.

A. No sir, if it means “attached,” Your Honor, it does not.

XQ9 Now, I take it that your answer would be the same as to claim 23, which says in one element, “a movable adjusting member connected to the lower edge of said clamping member at its rear closed end?” A. That's correct, with that same assumption.

Testimony of Peter C. McNulty (Resumed).

XQ10 Do you find that element of connecting the back of the heel band to the actuating or adjusting member in any other of the claims in suit in the McFeely patent? A. Claim 85 relative to the wipers and tackers doesn't have that connection claim,—that's also relative to the wipers and tackers and doesn't have that connection.

XQ11 I merely want for the Court's convenience to sharpen the issues between us, as to whether that question of connection between the heel band and the actuating member arises in any other claims, except the two you and I have just discussed, which are 91 and 23? A. I don't think it is in 42; I would have to run through it to be sure, but I don't think so.

XQ12 Now, on this question of the heel band being attached to the actuating member, is it your position, that when the defendant's construction has no physical connection between the heel band and the actuating member, if the heel band is pushed forward, and the actuating member retreats, that that heel band will also follow the actuating member, if there is no shoe to cause that movement? A. You mean that if the,—

XQ13 Just a minute,— A. I said in explaining it previously, unless the friction of the parts caused it to pull back, the contact between the parts surrounding the back end of the band there and pressing against the band, as the parts go back, they might pull the band back. I noticed on, I think, the model D machine, somebody took the screw out of the clip and actuated it backwards and forwards.

XQ14 That is not the question, and that is not the defendant's construction? A. Unless the friction of the parts pulled it back, there would be no connection to pull it back, unless the shoe pulled it back, or, it was pulled back by hand, of course.

XQ15 But only friction would do it? A. Of course, if you eliminate the hand and the shoe.

XQ16 Do you find the friction named as an element in either claims, 21 or 93? A. No.

XQ17 As a matter of fact, it couldn't be,—it is not a physical thing? A. No, but I noticed on that heel band out there, a lot of white stuff, which apparently came out of some shoe, and that might influence the surface of the tack, so that would carry the parts back. The important part is, you get a slide between the supporting clips and the presser members at the front.

Testimony of Peter C. McNulty (Resumed).

XQ18 But the friction on the shoe, is on the inside of the heel band, and we have been talking about friction on the outside? A. I didn't understand that you said friction on the shoe; I understood it friction between the heel band and the presser members on the part of the shoe.

XQ19 You went into friction on the inside? A. If I did, let's take that out of that remark, friction on the inside.

XQ20 We have been talking about friction on the outside? A. Certainly.

XQ21 As an engineer, Mr. McNulty, I am sure you will agree with me that in this defendant's construction out there, that there is nothing to support the back of that heel band, because that engaged face on the back of the actuating member is smooth and descends downwardly and backwardly, so that it slopes like the roof of a house, only a good deal more sharply? A. You are talking about support in a vertical direction; I am talking about support against a rearward movement, to move the band in the power cycle.

XQ22 If Your Honor will indulge me just a minute, I will go and get the piece out of there, so that Mr. McNulty can see it. So, we can conclude on claims 91 and 23, then, Mr. McNulty, that if those claims mean that there is a physical connection between the heel band and the so-called actuating member, the machine of the defendant, as it is now built, doesn't have those articles? A. Am I to be,—

THE COURT: No, the question is now, as the machine that you saw out there is constructed, whether or not it is within that element of the claim of the McFeely patent? A. Well, you see, there comes in the question of the scope of the words, and I have testified that the structure breaks the physical connection.

XQ23 Well now then, the answer, Mr. McNulty,— I am not asking you to construe the claim, although you have done so,—but the answer is that you don't find that physical connection in the defendant's machine, as it is recited in those two claims?

THE COURT: I think the answer is bound to be yes. A. You have gone over that; there is no dispute about the structure and what it is.

THE COURT: Just as I have said, the answer must be yes,—there is no physical connection.

A. Yes, there is no attachment there, but there is a physical connection, in the sense that there is a push there.

Testimony of Peter C. McNulty (Resumed).

THE COURT: Well, the point about it is, when the machine is in operation, then there is an attachment,—there is bound to be.

A. No, you don't get what I mean. I think when you adjust in one direction the parts binding the band, adjust them by the hand mechanism physically connected with the heel band, and push them forward,—although it is not attached to it, I don't think you can say there is no connection.

THE COURT: That's the only point.

A. Yes, it comes down to a question of accuracy, as to the scope of the words; that is, the meaning that is to be given them, and that's something that a witness shouldn't talk about.

THE COURT: Well; there is no question either, that at one time when this machine was in the Williams plant, that actually the band was attached, and that it has since been disconnected and they are operating without it.

MR. LYMAN: And they are getting the same results, as one of the witnesses testified.

THE COURT: Of course, the defendant is trying to show that the actual connection which the McFeely patent calls for, is no longer in there,—isn't that right? Then, of course, it is a question of law, to be determined, whether or not that really affects it?

A. That's what I meant by saying it is a question of the scope of the words, and I am not of much use about their "scope."

MR. TOULMIN: Mr. McNulty, you and I are alike on that, but we will pass to the next claim.

Thereupon, an adjournment was taken until 2:00 o'clock in the afternoon of the same day.

AFTERNOON SESSION

Thursday, January 19, 1939.

Peter C. McNulty,

resumed the witness stand and testified as follows:

CROSS EXAMINATION

By Mr. Toulmin:

XQ24 Mr. McNulty, with reference to the McFeely patent in suit, will you tell me whether there is any

Testimony of Peter C. McNulty (Resumed).

movement of the heel band, due to this back connection at the back of the band, as indicated in figure 6 of the drawing on sheet 5, with the associated mechanism, that causes that band to move vertically during the operation of the machine? A. During the power cycle of the machine, where the hold-down and jack are lifted between the first and second wipe, the band would have a vertical movement, equal to the uplift during that interval.

XQ25 And what causes the band to move upwardly during that interval, that is, what physical means,—can you give its number? A. Well, the thing that causes the band to move forwardly is the pressure of the presser plates against the side of the band, clamping it against the last and shoe, and when the last and shoe are moved upwardly by the power connection of the cam, the band moves up with it.

XQ26 How can the band move upwardly in the McFeely machine, if the back of it is firmly attached by the clip, 62, as shown in figure 6 and the members 64-60, or is there relative movement between the band 64 and the clip, 62, and rack slide 66? A. The pin 64, has a slight relative permissible movement between it and the rack slide, 66.

XQ27 Do you find in the defendant's construction, assuming that the heel band is attached with a clamp, any slidable connection such as 64, in the rack 66? A. In the defendant's construction, as I examined it last night, a set screw has been put in to unite what would be the member 64 in figure 6 of exhibit 14, solidly to what would be the rack slide 66.

XQ28 So, the answer is, there is no relative movement by such a set screw in position, is that correct? A. That's correct; of course, the band itself would have a relative sliding movement with reference to the rack slide 66, during that interval, that is, the band is moved upward in that defendant's machine, as we saw, in the upward motion between wipes, and it per se moves upward between them.

XQ29 But I am referring to a position where the band is attached by the clip to the back support; under such a condition in defendant's machine, when it is so attached, how can the back of the band move upwardly, if it is rigidly attached to the back slide? A. If it is rigidly attached, it cannot; but if the set screw is not threaded in there, the parts would go up just like in figure 6.

Testimony of Peter C. McNulty (Resumed).

XQ30 And in plaintiffs patent, in the McFeely, as set forth on page 3, at the bottom of the right-hand column, from line 130 to page 4, line 7, the heel band clamp moves upwardly for the purpose that you have just described a minute ago, is that correct? A. Yes.

XQ31 And that description says that the "slotted clip, 62, attached to its rear lower edge and guided by and guided for vertically upward movement on the shank of a stud, 64, secured to the forward end of the rack slide, 66, see Fig. 6,"—that's a correct description, isn't it? A. That's correct.

XQ32 You didn't find any slotted clip in the defendant's construction? A. If the set screw is there, that portion can't move.

XQ33 Whenever you clamp a member tight with a set screw to another member,— A. It doesn't move.

XQ34 So that, in the machine out there in the hall, it couldn't move upwardly, could it? A. That's correct.

XQ35 Now, it makes no difference, therefore, as to the upward movement of the heel band of the defendant's construction, whether it is attached or disattached to any back stop, because, even when it is attached, it can't move upwardly, isn't that correct? A. If the set screw is there, it can't move up, but it may move there through that threaded hole, where it could easily.

XQ36 But we are assuming that the screw is in the back? A. Under the assumption you have made, the answer is yes.

XQ37 Will you be good enough to turn to claim 6 of the McFeely patent in suit,—I am going to direct myself to that claim with a few questions, so that you will know where to follow. Before I get into the details of the claim, I would like to get a little help from you as to your understanding of the construction of the defendant's machine. First, to start with, I will state my understanding, and if you agree with it, that will be clear. So then, to proceed, as I understand the defendant's construction, as to the tacker and wiper construction, the tackers and wipers are bolted together, is that correct? A. No, they are bolted to the individual carrier.

XQ38 But they have no relative movement with respect to each other, is that correct? A. That's right, only, if we are going to be literally correct, there is a provision for an initial adjustment previous to clamp-

Testimony of Peter C. McNulty (Resumed).

ing them together, to get the holes of the tackers in the proper position with the holes of the wipers, and after they are set, there isn't any.

XQ39 I was referring to afterwards. We have shown on the defendant's construction,—or first, let's turn over by way of comparison to this chart, I mean exhibit 14, which you have, sheet 5 of the McFeely patent there before you, and I will ask you to tell me whether you find in the defendant's construction, any such thing as the spring 236, shown in figure 7 on that sheet? A. No.

XQ40 Do you have the limited stop 244, and arm 246, on the defendant's construction? A. No.

XQ41 Do you find the pin 240, in the defendant's construction? A. No.

XQ42 Do you find any yielding means, such as a spring, with means of permitting relative movement of the wiper and tacker on defendant's construction, as shown in figure 7 of the plaintiff's patent? A. No.

XQ43 Now, what do you understand to be in the plaintiff's patent,—and I will thank you to call out the numbers of the parts in the plaintiff's patent,—that responds to the last element of claim 6, namely,—“tacking units co-operating with the wiper plates and having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates?” A. In sheet 3 of the patent, which is enlarged as exhibit 16,—is that in position where you can see it, Your Honor?

THE COURT: Yes.

A. The plan view is shown of the tackers and wipers. Starting at the left-hand side, we have the side tacker, the base of which is 281, and the upstanding part of which is 282. That tacker is a tacking unit that co-operates with the wiper plate, which is 254, as shown in figure 5 of the patent. And, the means to maintain that side tacker in the predetermined relation to the wiper plate in position of adjustment, constitutes a sliding block, 264, which is fastened to the base plate 280, by means of the unnumbered screw and link 284, one end of which is attached to the sliding block 264, and the other end of which is attached to the end member, the wiper plate, 254.

That attachment is best shown in figure 5, where 284 is colored violet, and the wiper plate is colored light blue. In the end of the tacking unit which is called the corner, the head of which, or the upstanding mem-

Testimony of Peter C. McNulty (Resumed).

ber of which bears the number 288, and the press parts of which,—no, I am on this other side, Mr. Toulmin; the number is 294, I am not sure from that view,—that tacker has another tacker co-operating with that left-hand wiper plate in that view 254, and the means for maintaining that tacker in predetermined relation with this wiper plate, constitute a plate which is shown in contact with the back of the wiper, which is shown in another view, figure 12, as 294. Will you please point to it there, the one that contacts with the back of the wiper plate, the tan member which is against the light blue? There's 294, now, in the plan view, where it contacts the back of the wiper plate—there.

That is maintained in contact with the back of the wiper, by means of a spring 290, which bears against an adjusting screw, 292, and the limited movement in that direction, inwardly, is controlled by that member 296, and the nut, 298. So that, by means of the parts I have mentioned, that tacker is maintained in its relation to the wiper plates. Then the end tacker, that's shown in sectional view in figure 7, is held forwardly in relation to the wiper plate, at the extreme end of the circular or blue part, by means of the spring 236, and the pin 240, and in the normal movement of the slide 224, the parts 234, which is the end tacker, have no relative movement between the slide.

But the patent says that in the first wiping action, if the tacker should strike an obstruction from the latter, the spring 236, will permit it to be released instead of continuing to push forward, as if there were no spring there. At the forward limit, to give the correct setting for the cam travel, is a member 244, in the frame which works on a slide 242, on the base of the tacker. If you go on around the other side, the parts will be the same.

XQ44 That's sufficient. And, that's the mechanism that is referred to,—that's the meaning of the "means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates," is that correct? A. Yes, that's right.

XQ45 Do you find that mechanism in the defendant's construction? A. Yes, the mechanism of the defendant's construction, includes the tacker and wiper carrier plate, keeping their unity, so that, as the wiper plates move, the tackers go with them and are always in the same relationship used by position of adjustment.

XQ46 And the difference between the two, as I

Testimony of Peter C. McNulty (Resumed).

understand you, speaking physically now; between the defendant's and the plaintiff's construction is, that in the defendant's construction, after the adjustment has once been made, prior to operation, the tackers and wipers are fastened together and move as a unit, and in the plaintiff's machine, there's a relative movement between the tackers and the wiper, to bring about that movement that happened yesterday morning when Mr. Ryan was testifying in connection with the Model A machine, and His Honor was standing in front of it? A. Is that a fair statement of the circumstances?

XQ47 I am talking about the operation? A. You are talking about the power cycle. At the time when the tacks are driven, the relative movement that you have at the end of the first and second wipe, of course, is not so great, but the predetermined position of the parts, has been predetermined in such relationship, that the tacks drive properly with reference to the edges of the wipers, and they are maintained in that position by the parts I mentioned awhile ago.

XQ48 And they can't move relatively to one another on the hold-down? A. There may be some slight adjustment to each other, but after the tackers are,—

XQ49 I am referring, Mr. McNulty, not to the final moment, but I am referring to the complete cycle of wiping and tacking and their power to act with that situation. Let me ask you this one question,—on defendant's construction, the tackers and wipers don't move relatively to each other during that cycle, but in the plaintiff's patent of McFeely, the wipers and tackers do move relatively to each other during that cycle, as we saw yesterday,—isn't that correct? A. There's still predetermined movement in there.

XQ50 And whatever that movement is, the movement started up when Mr. Ryan was testifying yesterday in front of the model A machine? A. Yes sir, the Model A machine correctly represents what's in the patent. They both move together in both machines.

XQ51 Now, Mr. McNulty, will you go to the next claim, which, I think, is claim 42, in order. As I understood you this morning, you made the assumption that the last element of that claim which reads,—“manually adjustable means for determinately varying the amount of vertical movement of the hold-down,” was in the defendant's construction, because of the assumption made in the question put to you by your counsel,—that the nut, 208,— A. That's not a nut, Mr. Toulmin, that's a lug.

Testimony of Peter C. McNulty (Resumed).

XQ52 That's a lug? A. 288 is the lug with a common copper nut against it.

XQ53 They are in the defendant's construction, as shown in the Moenus catalog, Exhibit 10, rather as the construction of the defendant's machine exists in the hall, is that correct? A. Yes, that was the assumption of the question.

XQ54 Let me ask you this simple question, if that construction is not of defendant's machine as in the hall, that His Honor saw this morning, would you say that the defendant has in that machine in the hall, the last element of claim 42?

MR. LYMAN: We object to that question, if Your Honor please, as a hypothetical question.

MR. TOULMIN: There is no evidence to the contrary at this time that the defendant has taken off that adjustment since the suit began, there is no evidence for Your Honor to absolutely say,—

THE COURT: Let the objection be sustained.

MR. TOULMIN: If you decide that we have it in the hall, then there is no dispute between us,—but if this element is out, if we took it off out in the hall, then this construction, as far as this element is concerned, is not that, and that fact will bring this into sharp issue.

THE COURT: I was going to say, we went over that this morning. I think this witness may be examined at this point on that subject concerning anything to which he testified this morning, but the testimony must be based on what he said on direct examination this morning. I mean the questions must be based on that, and not on a hypothetical question which includes some assumptions that are not in the case.

MR. TOULMIN: I differ with Your Honor.

THE COURT: That is your privilege.

MR. TOULMIN: But I want to call Your Honor's attention to the fact that this witness testified as to the defendant's machine out in the hall. Now, suppose I rephrase my question and confine it strictly to that?

THE COURT: If you do that, it may be all right.

MR. LYMAN: The witness testified to the construction in the hall here as modified by the testimony of Mr. Ryan here, that when he saw the machine it had this thing out.

MR. TOULMIN: But I think I have a right to ask this question.

THE COURT: All right.

Testimony of Peter C. McNulty (Resumed).

By Mr. Toulmin:

XQ55 Mr. McNulty, you have examined the defendant's machine in the hall, is that correct? A. Yes.

XQ56 You found on the side of that machine, a plate that acted as a stop, in connection with the vertical hold-down,—you know what I refer to in that connection? A. Yes, the detachable member held in by the spring screw.

XQ57 Does that part correspond in your judgment to the “manually adjustable means for determinately varying the amount of vertical movement of the hold-down?”

MR. LYMAN: We object, if Your Honor please.

THE COURT: I think you can answer that question yes or no, and then you may explain, if you wish.

A. I would like to do both. Yes, and I would like to explain that; literally, no, but actually, the member is mounted in such a way that by manually undoing and screwing, a different length member can be put in there in a few minutes, and adjusted to any other position you want to.

XQ58 Don't you understand, as an engineer, that in “manually,” adjusting something, you must adjust it without using tools, such as a wrench, or a screw driver, or something; that's what “manually,” means, isn't it?

A. Yes, I understand your position. As I said, literally, the answer is what I said, but this is mounted detachably, with a screwed member that is readily detachable, and you can put in another length of member, if you want to.

XQ59 Let me ask you this question so as to be complete on the subject: you will agree with me, will you, that “manually” means, in mechanics, in connection with the adjustment and operation of a part, through a hand wheel or something of a similar nature, without the use of tools? A. Not necessarily without the use of tools, but it does mean a hand adjustment, and usually it has tended to be power, with some power adjustment.

XQ60 Now, Mr. McNulty, coming back to 42 again, if you would operate the McFeely patent in suit, in accordance with the teachings of claim 42, as to the cycles of movement, and using the parts recited in that claim, will you tell me whether you would have up-wiping? A. I would say that whether you had up-wiping or not would depend upon the design of the cam track, and the relationship in which the clamping

Testimony of Peter C. McNulty (Resumed).

means was actuated to clamp the shoe with reference to the time that the hold-down is moved down. If you kept the clamping means open until the hold-down had finished its movement, you wouldn't have upwiping. If you timed it so that it would clamp simultaneously with the hold-down movement, you would have upwiping.

XQ61 And then the claim states, in the middle of the claim about line 11 of the claim, of claim 42,—this is the phrase on which I want to ask you a question,—“power operated mechanism effective to move said support forcibly to press the last and shoe against said clamping means?” A. Keep going,—“and hold-down.”

XQ62 “And hold-down.” That means that at that step the shoe is pressed in tightly against the heel band? A. Yes, against the back-stop, behind the heel band.

XQ63 And there's a clamp engaged between the shoe and the heel band at that time, isn't there? A. I would say no, there.

XQ64 Where is it, in that cycle? A. Keep reading,—“and to actuate.”

XQ65 When is it in the cycle of operation that the heel band clamps the shoe, so that it can't be anything except a relative movement between the shoe and the heel band for upwiping purposes? A. At the time in the power cycle when the curves that would represent the closing of the heel band, would move downward on the hold-down to coincide.

XQ66 All right; now, come to the next clause of the claim,—“and to actuate the clamping means?” A. That's part of the clause you have just been reading.

XQ67 “Mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers.” Doesn't that mean, in combination with the preceding element, that the shoe has been clamped by the heel band to such degree, and then there's a relative movement which would bring about the up-wipe? A. If you did that, it would bring about up-wipe, but whether that specific wording limits you to upwipe or not, I don't see that it does, because the mechanism is effective in timed relation to do those things, and it can be either before or after.

XQ68 And is it not true that the claim recites one after another element, and what they do in sequence in describing the operation of the parts? A. Yes, it gives the sequential operation.

XQ69 And if you follow that sequential operation of the parts as described in the claim, 42, you would then

Testimony of Peter C. McNulty (Resumed).

have upwipe, wouldn't you? A. It all depends on how closely you follow them, Mr. Toulmin.

XQ70 Please answer yes or no, and then explain?

A. Well, the steps when taken, if you actuate the clamping means first, as the words read, and then actuate the hold-down, you would get upwiping.

XQ71 Now, will you turn, Mr. McNulty, to claim 85, which you will find on page 24 of the patent, and I want to verify my understanding of your direct examination and your answers, as I understand them. That claim calls for this,—“additional power means for subsequently operating the wipers.” Now, where do you find in the claim, power means already recited in the claim, in addition to these so-called power means? A. I didn't take it that the claim up to that point had mentioned power means in connection with the wipers, but I took it that the last and shoe positioning means, would include power means, in connection with the last and shoe positioning means.

XQ72 Now, to give the Court and myself the benefit again of your testimony, as to the physical differences between the defendant's construction and the McFeely patent in suit, will you again briefly tell us how the defendant's construction operates in this particular field, that is, will you describe that again,—just recite that again, will you? A. Well, the defendant's construction has a last and shoe positioning means, which as I pointed out, was the jack, and post underneath the shoe, and a hold-down on top of the shoe. Now, I didn't say anything this morning about this means, being at that time operative by power, but in any search for an extension and variation, that's where I would go to look for that. Then it says end embracing wipers, which are the wiper plates of defendant's construction,—means for effecting preliminary adjustment of the wipers and tackers to the shoe. And, in the defendant's construction you have a hand wheel on the shaft, and on the shaft they have a pair of gears, which mesh in with another pair of gears on a horizontal shaft that has a rack on it. The rack engages the upstanding shaft that has a gear toward the bottom of the first sector that has gears on it, and the sector engages gears on the arcuate part of the wiper and tacker carrying members. The wipers are attached to the underneath side of the shaft by adjusting the hand wheel, in order to get a preliminary adjustment of the wipers. Then, “additional power means for subsequently operating the wipers.” This is the

Testimony of Peter C. McNulty (Resumed).

cam, which, though operating the last and shoe positioning means, carries a member toward the bottom, fastened in a slide which subsequently operates the wipers. In that operation, the slide moves the vertical upstanding shaft I spoke of with reference to the racked parts, so that the wipers are carried bodily forward, and through the action of the gear with the shaft are swung inwardly while they go bodily forward. Then, next, did you want to ask something about that? Then next, "and tackers connected to the wipers for preliminary adjustment with them, and for power effected movement with the wipers subsequently over the shoe." The wiper carrier block is the member to which the tackers are connected, and the member to which the wipers are connected. It is the member which modifies the movement to those parts during the preliminary adjustment, and it is also the member which provides the swinging movement of the wipers and tackers during the power movement over the shoe.

XQ73 In defendant's construction, the large casting that carries all of this adjusting mechanism and is actuated bodily, is a large sort of a U-shaped casting, is it not? A. Yes.

XQ74 That moves back and forth and carries the adjusting mechanism, and is intended at the back to push it back and forth, is that correct? A. That's correct, yes.

XQ75 Now, will you turn to the Hoyt patent, with reference to claim 19. What is the operating member that you refer to in this patent, which corresponds to that phrase in claim 19? A. You mean that phrase in claim 19 which says, "operating member?"

XQ76 Yes, just point it out by number? A. The member 188; look at figure 2,—number 188.

XQ77 188 is the equalizer? A. Yes, it is an equalizer; it is a power transmitting member, just the same.

XQ78 And 186 is a power transmitting member, too? A. Of course.

XQ79 And the bell cranks, 178 are power transmitting members? A. That's right, but the power member 188, parallels the very similar parts on each side, 184 and 176, and therefore, I take that as an operating member for both parts.

XQ80 As a matter of fact, the patent itself describes the arm, 200, which is actuated by the cam, — you will see it on figure 1, at the side, in dotted lines, Your Honor,—it describes that as the operating member,

Testimony of Peter C. McNulty (Resumed).

because it is from that that the power is originally distributed in order to move the cam? A. If you will change "the," to "an," I will say yes, it is "an operating member."

XQ81 It is the only source in association with the cam, of any power movement? A. Well, the cam, of course, is the source of the power movement, but the train of mechanism, as I described it down through, from the member 200, through the slide block, and through the spring, ultimately gets up to the member 188, and if you follow through the rest of the claim, you will see that the member 188, performs the function of providing an operating member in the prior unyielding connections from that member to the presser.

XQ82 And if that arm, that 200, as described in the specifications on page 5, left-hand column, is the operating member, then we have a yielding spring 192, interposed in the path of the movement? A. Why, the patent says so; it says that ~~transmits~~ the movement yieldingly to the rod, and thus to the arms 158 and 160, and that's literally correct; that's what that does. But the claim calls for this operating member. From it to the presser members, there are no unyielding connections there; it couldn't be.

XQ83 You say that 188 is a power member? A. I say 188 performs the function that I understand that claim to be, when it says operating member.

XQ84 And if 200 is a power operating member, then there would be a spring in the path of the movement, wouldn't there? A. Yes, of course.

XQ85 Now, of course, the Hoyt machine won't work in pressing through the ends of the heel bands, unless there is a yielding connection between the source of the power and the ends of the bands? A. I think we have proven that.

XQ86 Isn't that true? A. That's my understanding of the testimony so far.

XQ87 This morning you made the assumption that the small spring known as the bight spring,—Your Honor, I will use that word,—

THE COURT: That's at the back of the heel band.

XQ88 Now, in answering your questions this morning, you assumed in the defendant's construction, that those two gear springs, one on either side of one of the machines,— A. I was asked to make that assumption, that's correct.

Testimony of Peter C. McNulty (Resumed).

XQ89 Now, that element, or this element, consisting of those two bight springs, is defined in the last element of claim 19, is that correct? A. Yes, that's correct.

XQ90 Now, let's go down to claim 21. What do you define in the Hoyt patent as that element about the middle of the claim known as "means for supporting the band?" Will you give it a number so that I can find what you are referring to? A. Yes, I gave it two numbers this morning. The first one is the clip, 142, and the second one is the maintenance back-stop, 234, which is mounted on 236, on the supporting member.

XQ91 It is the clip 142? A. Well, the first part is the clip 142, that's the supporting clip at the rear end, and then there is also the support by the member shown in figure 6, as 236. In figure 2, the plan view, however, its curved portion is shown as 234, that's the back-stop, 236, for the portion that's mounted on the pin 144. That's the plan view. It shows this part up here, but down where it is mounted on the pin, it is 236.

XQ92 Will you look at figure 6, Your Honor,—I think that will show it to you in section up here on the board? A. You have a pin 144, which is mounted on the slide block 146, and in the block, the opening with a shoulder in it, so that pin 144, is supported in the main supporting block. On that sheet, is the member 236, which is mounted on this clear portion of 145. Now, the upper part of that member, 236, is shown in the plan view, that you are looking at, and on that is marked 234, which is the back-stop member. Now, that's the second support that I mentioned. The clip member 142, which is fastened to the back band, is also fastened to this same pin member, 144. I shouldn't say also fastened, but it is fastened to the pin member 144.

XQ93 It is the only one that is really fastened? A. That one is fastened. It is mounted,—I see around it,—the 236 member is mounted in such a way, that the pin 144, goes through it, and its outline displaced by the members above it, which, if it were drawn together upward would push against the arms of the part colored pink here above it.

XQ94 Do you contend that the clip 142, at the back of the heel band, Mr. McNulty, would do anything to attach that heel band to the back-stop in this construction? A. There would be no fastening of the heel band to the support.

XQ95 That's the same question we had this morning before lunch as to the other claims. A. Yes, it is the same situation.

Testimony of Peter C. McNulty (Resumed).

XQ96 So, if the defendant doesn't have that clip, assuming that in the question,— A. It is not exactly the same situation, Mr. Toulmin.

XQ97 I haven't finished my question? A. That was relative to means for supporting the band. We were talking this morning about the word "connected," here. I said, supporting is the supporting band, against either a displacement in the direction of the axis of the sliding part of the machine, which is one form of support, and another, is the support in the direction at right angles to that, so I have given both supporting means. That's a little different from the case we were talking about this morning. Now, if you will go ahead with your other question,—

XQ98 What I wanted to know was whether we could reduce this matter down to its lowest common denominator. We have here, as one element of the situation, in connection with these claims, this same problem that we were discussing this morning, on the removal of the clip 142, as being a part of the supporting heel band in the defendant's machine,—is that correct? A. If you remove it, you eliminate what I term the vertical supporting means for the band.

XQ99 Let's go to another element of this claim 21. I am referring now to the next element,—"devices comprising arms loosely mounted on the supporting means." As I understand it, this Hoyt patent doesn't show any of the lock or set screws, whatever name you want to call them, that appear in the model exhibit 8-A on the super-imposed structure of that 533 and 532, is that correct? A. Yes.

XQ100 Now, with that understanding, is there any difference in your mind as an engineer, between pivotally mounting an arm and loosely mounting it? A. Well, just those two words there, would seem synonymous to me. You might divide or unite on that. It is a thing about which you might differ. Loosely mounted is a mounting on which a thing would turn.

XQ101 Isn't it a fact that if you have a loose mounting, that means pivot, and if you pivot, it must be loose? A. Oh! I suppose either one of them could be interfered with by something else.

XQ102 But obviously, loosely mounted means, does it not, the movement of a member about another, so that it moves about the axis of that member, about which it is moved? A. All right; it moves closely to it in some relationship. In a large group of them, sometimes they have a pin or what not.

Testimony of Peter C. McNulty (Resumed).

XQ103 In other words, you will agree with me, will you not, that in the pivot we have a constant relationship between the pivotal support and the arm, which is pivoted on it; while in the loose connection we have a movement between certain parts of the pivot that is mounted on the loose connection, and it has a stud or member supporting it, isn't that correct? A. Yes, but here you have got a specific application. By looking back at the specifications, for your definition as to what loosely mounted means, it simply means a pair of arms, not pinned to the member on which they are mounted.

XQ104 Now with that understanding of what you are going to testify to,—that you are basing it upon that interpretation, let me ask you this question. If the set screws are set so as to bear upon the back support, as they are in this model 8-A and the springs, the bight springs, are unyielding, that is, they don't give; then, under such circumstances, there would be no movement of those arms, 533 and 532, that's correct, isn't it? A. That's right. Now, you take another element of the claim next and jump over means normally operative to press the devices against the band.

XQ105 I haven't got to that yet? A. You did get to it when you brought this spring in.

XQ106 I was assuming that the springs were not operative. Under that relationship, if the springs were not operative; then the arms couldn't move, could they? A. Of course, if you lock them, then they can't move.

XQ107. The movement comes about, therefore, by having the bight springs of insufficient strength, so that they will not hold under the pressure applied by the heel bands and shoe, that's correct, isn't it? A. Yes.

XQ108 So, if we don't have those bight springs in claim 21, then we wouldn't have arms moving loosely? A. Well, you wouldn't have means normally operative to press the devices against the band, and the arms might be loosely mounted just the same.

MR. LYMAN: We have here the photographs that were taken last night that just came in a little while ago.

THE COURT: Well, that's a part of the direct testimony, and it is simply a question of identifying them and putting them in evidence.

MR. LYMAN: It might be that if we had a little more time later, the witness could put legends on them before we get away from here, so as to indicate what they are. But, I think we might take them and put them in evidence as a group, and give them exhibit numbers.

Testimony of Peter C. McNulty (Resumed).

MR. TOULMIN: I couldn't stop now to look at them, but I might like to make some suggestions as to whether they would indicate the normal operation of the machine.

THE COURT: While this witness is here, let him look at them, and later, when we recess, counsel will have a chance to examine them, and then you may offer them in evidence.

A. Let me suggest we might break them up into groups, perhaps group the parts that are particularly related to some of the claims, say, the parts relating to the heel band mechanism, and the parts relating to the tacker and wiper mechanism.

THE COURT: I think what I would do now, would be to look at them as a group and see whether they substantially represent the various parts of the machine, and then you can later work it out. But I would say look at them now and see whether they substantially represent the parts of the machine out in the hall, and then, after our recess, Mr. McNulty can be the first witness back for the purpose of identifying and offering them.

A. I directed how they should be taken.

RE-DIRECT EXAMINATION

By Mr. Lyman :

RDQ1. What are these photographs I hand you?

A. The 22 photographs you hand me are the photographs taken last night of the defendant's machine and the various parts thereof.

RDQ2 They are the photographs of the defendant's machine that is out here in the hall adjacent to the Court room, which the defendant has produced? A. Yes sir.

RDQ3 And the parts were dis-assembled by the mechanic who is here, an employee of the Williams Company, who very kindly assisted and dis-assembled the parts, so that you could have these photographs taken?

A. Yes, his name is Stephen Schnabl.

MR. LYMAN: I will offer these photographs in evidence as a group, the 22 photographs, and ask that they be marked plaintiff's exhibits 25-a to v, inclusive.

Counsel for plaintiff offered in evidence, a group of 22 photographs, being plaintiff's photographs of defendant's (Moenus) machine, produced by defendant, and said Photographs are made part of this record, marked **Plaintiff's Exhibits 25-a to 25-v**, both numbers inclusive, as follows:

Testimony of Peter C. McNulty (Resumed).

Plaintiff's Exhibit 25-a, Complete view, left-hand side.

Plaintiff's Exhibit 25-b, Complete front view.

Plaintiff's Exhibit 25-c, Complete view, right hand side.

Plaintiff's Exhibit 25-d, Close up view, part of right hand side.

Plaintiff's Exhibit 25-e, Close up front view.

Plaintiff's Exhibit 25-f, Front view, into tacker-wiper mechanism.

Plaintiff's Exhibit 25-g, Bottom view, tacker and wiper unit.

Plaintiff's Exhibit 25-h, Bottom view, tacker and wiper unit, right hand plate removed.

Plaintiff's Exhibit 25-i, Top view, part tacker and wiper unit.

Plaintiff's Exhibit 25-j, Close up view, tacker and wiper unit removed.

Plaintiff's Exhibit 25-k, Heel band mechanism looking up from bottom.

Plaintiff's Exhibit 25-l, Heel band mechanism from bottom with machine actuated.

Plaintiff's Exhibit 25-m, Heel band mechanism, band in place.

Plaintiff's Exhibit 25-n, Heel band mechanism, band closed.

Plaintiff's Exhibit 25-o, Heel band mechanism, bottom view, band upside down.

Plaintiff's Exhibit 25-p, Heel band mechanism, from above, parts separated.

Plaintiff's Exhibit 25-q, Top view heel band.

Plaintiff's Exhibit 25-r, Rear view heel band.

Plaintiff's Exhibit 25-s, Right hand side heel band.

Plaintiff's Exhibit 25-t, Left hand side heel band.

Plaintiff's Exhibit 25-u, View of actuating parts, set screw, supporting slide, back stop, presser plates and so forth.

Plaintiff's Exhibit 25-v, Right hand side rack device, plug and nut.

At this point a short recess was taken after which the witness Peter C. McNulty resumed the witness stand and testified further as follows:

By Mr. Lyman:

RDQ4 Mr. McNulty, will you give a brief description of each one of these photographs that we have offered in evidence as plaintiff's exhibit 25, and which are now marked plaintiff's exhibits 25, a to v, inclusive? A.

Testimony of Peter C. McNulty (Resumed).

These are pictures which were taken last night of defendant's machine in the hall. Exhibit 25-a, is a complete view of the left hand side of the machine, from the position which would be the left hand of the operator standing in front of the machine. Exhibit 25-b, is a complete view of the machine almost directly from the front of the machine. Exhibit 25-c, is a complete view of the right hand side of the machine. Exhibit 25-d is a close up of a portion of the right hand side of the machine, in which the circular part has been brought out and shown on the photograph as 1224-87002. On that side of the machine, the tackers, you may see the name Moenus, which was chalked there from the letters in the casting. Exhibit 25-e is a close up of the front view of the machine, looking directly into the heel band, and into the tacker and wiper mechanism. The jack post has been covered so that it wouldn't interfere with the picture.

Exhibit 25-f is a front view looking into the tacker-wiper mechanism only; that part was removed from the machine and a front view photograph taken of it. I am pointing to the wiper plates at the bottom, above which are the tacking units. Exhibit 25-g is a bottom view of the tacker and wiper unit on exhibit 25-f, in which the wiper carrier plate, the sector members are shown, the tacking part being the slide itself, and the wipers are shown in position on the plate. The screws which hold the tackers to this plate, are shown, also, the screws which hold the wipers to the plate are shown. Exhibit 25-h is the same as exhibit 25-g, except one wiper plate on the right hand side has been removed so that the right hand side shows the complete wiper carrier member in engagement with the sector member, and the ends of the tacks are fastened at the inner edge of this member. The left hand part is the same as on the preceding exhibit. The plate which has been removed is shown in the lower right hand corner of the photograph.

THE COURT: That's supposed to be the tacking arrangement, this one?

A. Yes, you can actually see the heel. Exhibit 25-i is a top view of a portion of the tacker and wiper unit in which the cover member has been removed, so that the connecting shaft and the sector member in the preceding exhibit is displayed, this top portion with this gear may be seen, and the rack into which it meshes on the threaded shaft is shown. Just hold that for a moment. Exhibit 25-j is a close up view of the machine after re-

Testimony of Peter C. McNulty (Resumed)

moving the tacker and wiper unit. I am pointing to the hand wheel which adjusts the wipers for preliminary adjustment, which is mounted on a horizontal shaft with two gears on it. The gears mesh in with a gear shown in exhibit 25-i, upon which the rack is mounted. The turn of the hand wheel turns the gears and turns the shaft in exhibit i and advances the rack member which, in turn, rotates the shaft, shown in exhibit i, and also rotates the carrier shown in exhibit h, which in turn rotates the wiper carrier member. And the wiper carrier member is mounted upon a slide in which it has a dove-tailed relation, so that when turned, it will have a swinging movement with reference to the slide. Exhibit 25-k is a view of the heel band mechanism, looking upwardly from the bottom, showing the heel band in its forwardly adjustable position upon the power driven mechanism, looking through, as I am now, pointing to it on the exhibit, actuating the rack, the bell crank lever and presser members to close the heel band. Exhibit 25-l is similar to 25-k, except that the machine was actuated to move the presser members inwardly, and since there was no shoe in the machine to prevent movement, the heel band moved inwardly to the position shown on this photograph. Then on exhibit 25-m, the band adjusting mechanism was moved backward and the band pushed back into place, as shown, and opened that way, and that photograph taken. Exhibit 25-n, is the same as exhibit m, except that the band has been closed by the pressure member, and that adjustment made. Of course, the bands wouldn't close, if there was a last in between them. Then in exhibit 25-o, the heel band, the adjusting member behind it, and the presser side members were put in place and the band turned upside down, and a picture taken of that. So, that's a bottom view of the heel band, with clips that support it and the adjusting member associated with it. Then exhibit 25-p represents the same parts looking down on them, but the parts pulled out away from one another, so that each part stands out by itself. The heel band is shown in the topview behind it, and the adjustable slide members with it, and on each side of it, one of the members of the pressing unit.

Then the next four, q, r, s and t, are different views of the heel band alone. Exhibit q is a top view of the heel band. Exhibit r, is a rear view of the heel band. Exhibit s is the right hand side of the heel band. And exhibit t, the left hand side of the heel band. Then ex-

Testimony of Peter C. McNulty (Resumed).

hibits u and v are pictures of the adjusting mechanism behind the heel band. They have been marked, so that it would be better to turn them upside down to look at them. In exhibit u, the parts were taken from the machine and turned upside down so that the rack device which actuates the parts would be visible. The set screw which holds the machine members in place within the supporting slide is visible, and the back-stop, the presser plates and the parts contacting them from the yoke arms are all shown. Then in exhibit v, the right hand side one has been dis-assembled, so that the plug which has been put in instead of the spring is shown, and the nut that holds it in place is shown.

THE COURT: Are those parts so constructed that they could have a spring in there?

A. Oh! all you would have to do is to fit the block that's down here the right length and introduce a spring.

MR. TOULMIN: It is admitted that there was a spring in there.

A. The photographer said that it would be wiser to put in another set of photographs tomorrow, that these were washed, he thought thoroughly, but he would not guarantee that they would not fade in time. He will give me a set tomorrow that will not fade. He thinks it might be wiser to put those in evidence rather than put these in evidence.

MR. LYMAN: We will ask Your Honor for leave to do that.

A. If counsel would like, I can apply the same colors to them that I have shown on the other photographs.

THE COURT: I don't think it is necessary.

A. I want to express my thanks to Mr. Toulmin's man, Mr. Stephen Schnabl, for the help he gave me; he was very helpful.

Thereupon, Mr. Peter C. McNulty retired from the witness stand.

MR. LYMAN: We rest, Your Honor.

Stephen Schnabl,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

By Mr. Toulmin:

Q1 State your name? A Stephen Schnabl.

Q2 How old are you? A I am 40.

Testimony of Stephen Schnabl.

Q3 Where do you live? A I live in Portsmouth, Ohio.

Q4 About how long have you lived there? A. Since 1923.

Q5 Where did you come from before you went there? A I came from Germany.

Q6 Have you been employed by the Moenus Company, of Frankfort? A No sir.

Q7 You have lived in the United States since you came? A Yes sir.

Q8 Are you an American citizen? A Yes Sir.

Q9 By whom are you employed now? A I am employed by the Williams Manufacturing Company.

Q10 In what capacity? A Maintenance Supervisor.

Q11 What does that mean, just briefly? A Well, it means that I have to see that all the machines in the lasting department are kept in working order, so they can go out and work at them without any trouble, and, if any trouble occurs, that it can be taken care of as quickly as possible.

Q12 Who takes care of the trouble in case there is some trouble with the machines? A I do.

Q13 You do it personally? A Yes sir, and I have one alternate.

Q14 How long have you been doing this kind of work for the Williams Company? A Since the 6th of February, 1934.

Q15 What did you do before that time? A I was with the Norfolk and Western Railroad Company since 1923.

Q16 What was the first job that you had with the Williams Company when you came there? A I was interpreter for about three months.

Q17 What was the reason for having you as an interpreter? A When these machines came,—

Q18 What machines do you mean now? A The lasting machines.

Q19 You mean the ones we have been talking about here? A. Yes, sir, these heel seat lasters, a man came with those machines from the Moenus factory, and he was unable to speak English; therefore, he couldn't make himself understood, as there was nobody at Williams who could speak German.

Q20 Did you act as interpreter for him? A I acted as interpreter.

Q21 How long did he stay there after you went to work? A He stayed until the 1st. of May, 1934.

Testimony of Stephen Schnabl.

Q22 And did you do any mechanical work with him on those heel seat lasters while he was there? A Yes sir.

Q23 Just what did you do? A Well, he fully instructed me in the operation of those machines, and we put the steps on those hold-downs, we put them in before the machines went in operation.

Q24 Before we get to the details on the machines, I want to ask you a couple more questions; when this man was there did you do any lasting of shoes on the machines? A Yes sir, I had to do lasting on those machines under his supervision, so I could, if necessary, teach any other new man on those machines.

Q25 Did you ever instruct anybody how to operate those machines? A I have, several times.

Q26 Since this man left and went back to Germany, have you done any lasting of shoes on the machines? A Occasionally.

Q27 How many machines are there? A There are four.

Q28 Are they different or alike? A They are all alike.

Q29 I want to ask you some questions about certain features of the machines. If you don't understand my definitions or the terms I use, say so, and I will change them some other way, so that we won't misunderstand each other. Do you know what is known in that machine as a heel band? A Yes, sir.

Q30 Do you see anything like a heel band on that table there in front of you? A Yes, sir, this is the heel band. (Indicating)

Q31 Now, I wish you would tell the Court the entire story as you know it, only within your personal knowledge, as to the connection, if any, that that heel band had with the back support at the time that the machines were delivered from Germany? A When the machines were delivered, when I first saw these machines, they had a wing screw at the end of the band in a little clip, or rather, the heel band had a little clip, which was screwed onto a member of the machine by means of a wing screw, but that wing screw kept getting loose, since in between the two wipes, there's an upward movement, and the two side members kept going up, and the rear member stayed rigidly solid, causing some friction, and that friction unscrewed that set screw continuously, so that we lost quite a few set screws at the beginning, even while the mechanic from the factory was here, and he had me go and get some additional set screws so he

Testimony of Stephen Schnabl.

could replace them, but they got lost, and after he left, I never bothered putting them back, because the machines worked just as well without them; in fact, I believe they work better, because it gave the back of the band a chance to rise with the front.

Q32 Now, about how long did the machines continue, according to your memory, with those wing screws?
A. At the change of the season, the first change of the season, I never even bothered to put them back.

Q33 What year was that, do you remember? A. In 1934.

Q34 That was the year the machines were received?
A. Yes, sir, there were three machines received before I came there in 1933, and one machine was received while I was working there.

Q35 Well now, what do you mean by the "change of season?" A. "Change of season," in shoes, you have four seasons, and you are generally one season, about three months ahead of time, of when the season really changes, and when we went into the Fall season, I think it was about the beginning of July, we did away with it altogether.

Q36 Now, you say you did away with it altogether, —what do you mean by that? A. We quit buying additional set screws.

Q37— And what happened to the back heel band then, —how was it fastened, or was it loose? A. It was loose.

Q38 What kept it from falling off of the machine?
A. Those two clips on the side.

Q39 Near the front of the heel band? A. Here, these two members. (Indicating)

Q40 Now, will you tell us whether anything else was done to this heel band clip at any later time, in those four machines? A. The only thing that was done to them was, I was instructed to saw them off, so that nobody could put anything in there.

Q41 Do you remember about when that was? A. That was in December, 1936.

Q42 And what did you do when you sawed them off, —what was the operation? A. I took the hack saw and severed those two prongs,—I cut those two prongs off.

Q43 Between the time that you stopped buying the screws, and the time that you sawed off the two prongs with this hack saw, were those heel bands on any one of those machines or all of them, attached to the back?
A. There was none of them attached.

Testimony of Stephen Schnabl.

Q44 Since December, of 1936, when you took that hack saw and sawed off those clips, have those clips been restored at any time? A. They have never been restored.

Q45 Have the wing screws ever been restored? A. No, sir.

Q46 Have any complaints come to you about the operation of the machines because of the fact that the heel bands were hanging down in this manner? A. No, sir.

Q47 Let's go to another feature of the construction of those machines. I want you to tell the Court how long the set plate that constitutes the hold-down control that appears in that machine out there in the hall, has been on these machines? A. What do you mean?

Q48 I mean the plate that is mounted on the side and has a spring alongside of it? A. The stop?

Q49 The stop? A. That stop was installed by the man that brought the machines over here.

Q50 Did you see him place them on? A. I helped him install two on the later machines that were put into operation, at the time when I was employed at Williams.

Q51 That was while this man was here from the factory? A. When that man was here from the factory, he installed them.

Q52 And what year was that? A. That was in 1934.

Q53 Are those stops the same on all the machines, or different? A. On every one of the four machines, they have the same stops at the same place, and of the same length.

Q54 What is the purpose of that stop upon those particular machines? A. To limit the amount of hold-down travel.

Q55 Do you remember at any time about one of the machines being taken, in the Williams plant, off of the production line and put downstairs in one of the front rooms for demonstration? A. Yes, sir.

Q56 Do you recall about when that was? A. Yes, sir.

Q57 When was that? A. That was about 1936, in December, when I was told to take it out.

Q58 Who told you? A. Mr. Gialdini.

Q59 What were your instructions from Mr. Gialdini? A. I was told to yank the machine off the line and bring her down in the experiment room and set it up.

Q60 What machine did he tell you to take out? A. He didn't tell me anything; he just told me to yank a machine out of there; and I took the machine that was

Testimony of Stephen Schnabl.

nearest to the elevator and nearest to the line, so that I didn't have to dismantle any lasting line.

Q61 What do you mean by lasting line? A. We have a mechanical transportation line.

Q62 A conveyor line? A. Yes, sir, conveyor line.

Q63 How were those four machines located with reference to the conveyor line? A. There's one machine to each conveyor line, and the conveyor lines, they run lengthwise through the room, from the beginning of the operation, of the real lasting operation, unto the bottom filling operation, and the various machines are placed in that lasting line in their proper places, and the heel seat lasters are along this line. Those lasters are fairly close together,—I believe the distance is about 6 feet, and if you have to move a machine out, you have to dismantle the conveyor line to take it out, and so I took the laster that was furthest out, where there was no other conveyor line opposite, and yanked the machine downstairs.

Q64 Now, will you tell us when you took the machine downstairs, did you have anything further to do with it after it was taken down? A. No, I had to help make connections with the electrician for supplying the power.

Q65 How long did it stay downstairs? A. About 10 minutes.

Q66 I mean how long did the machine stay down,—not you? A. It stayed down over Sunday.

Q67 Do you recall what day it was put downstairs? A. It was put downstairs on a Saturday.

Q68 Now, do you know whether or not at any time any of those machines ever had the serial numbers erased on the machines, by pounding with a hammer, or by any other means? A. No, because that would be contrary to the instructions I got from the mechanic from the factory, because he pointed out that in any machine, whether it is a heel seat laster, or any other lasting machine, that if you would order any spare parts, you must not only specify the serial numbers, but you must specify the individual numbers of those machines, so the factory can refer to what machines were sold to you.

Q69 Does any one else have access to the machines to change them, except yourself, or adjust them? A. My alternate.

Q70 Who is he? A. Louis Reinhart.

Testimony of Stephen Schnabl.

Q71 How often do you alternate in the shop, do you work together or on different shifts? A. We were on different shifts.

Q72 You see the machines every other shift, is that right? A. Yes, sir.

Q73 Now, this afternoon, I think it was, Mr. McNulty referred to a set screw being placed in the vertical pin that carries that back stop; can you tell us whether that set screw has ever been changed? A. That set screw has never been changed.

Q74 Are you familiar with what is known as the cam in those machines? A. Yes, sir.

Q75 Has that cam ever been changed in any of the machines,—how many cams do you have altogether? A. We have four cams on the machines and one extra cam.

Q76 Where is that extra cam? A. The extra cam, I believe it is out in the witness room.

Q77 I will say to counsel if they want to see the extra cam they can see it. I am not putting it in evidence, because we use it as our spare in case of a break down. Now, in operating those machines, do the tackers and wipers move together, or do they move independently of each other? A. They move together.

Q78 How are they fastened together? A. They are screwed together.

Q79 Is there any means to permit them to move relative to each other when the machine is operating? A. Those screws prevent them from moving.

Q80 Were you present when the representatives of the United Shoe inspected those cams there in December, 1936, at Portsmouth,—were you downstairs? A. No, I wasn't present.

Q81 Have you ever operated the machines, any of those four machines or all of them? A. I have operated all of them.

Q82 What I meant to ask you was whether you have ever turned them over and operated them without the tackers, to observe the operation of the wipers, without the tackers? A. I had to, because I was absolutely green,—I hadn't known any shoe machines previously, and when Mr. Bender, the man, left, it was up to me to become familiar with them in case of a break down coming up.

Q83 I want to know if you have ever operated any one of those Moenus machines by taking off the tackers, and just operating the wipers without the tackers? A. Oh! yes.

Testimony of Stephen Schnabl.

Q84 Do the wipers move any differently or act any differently, without the tackers than with them? A. No, they act absolutely the same.

Q85 Do you know what I mean when I say the coil spring,—that we call the bight spring? A. I suppose I know; I have heard it so much in Court; I suppose you mean this little spring in here. (Indicating)

Q86 That's the spring that's near,— A. In that back stop.

Q87 That's a coil spring? A. Yes, sir.

Q88 Now, this machine outside here, have you got this bight spring in position in the machine or out? A. No, we have no bight spring; Mr. Gialdini instructed me to take them out about six months ago.

MR. LYMAN: Who instructed you?

A. Mr. Gialdini, our chief engineer.

Q89 Tell me whether or not the four machines have been operating since that time, so far as you know, without those bight springs? A. 16 hours every day.

Q90 Have you observed any difference in the operation of the machines prior to taking out the bight springs, as compared with since the time you took them out? A. None whatever.

Q91 Have you had any complaints from any of the operators, about the machines not operating right in the last six months? A. No, sir.

Q92 Do you recall what the serial number or the chalk number or painted number was, on the machine you took off the line to put down for inspection in 1936? A. I don't believe I do.

CROSS EXAMINATION

By Mr. Lyman:

XQ1 Where did this particular machine that is in the Court House come from? A. It came from Germany.

XQ2 No, but when it was brought to the Court House,—did it come direct from Portsmouth? A. Oh! yes.

XQ3 Are there three others of those machines now at work in Portsmouth? A. There are three other machines, yes, sir.

XQ4 In Portsmouth? A. No, there are three in Portsmouth and one at Minster.

XQ5 You mean that the Williams Company keeps one of those machines out at its factory at Minster? A. Yes, sir.

Testimony of Stephen Schnabl.

XQ6 And the other three are located at Portsmouth?
A. Yes, sir.

XQ7 And the one that is present here in the Court House was taken from the three at Portsmouth? A. Yes, sir.

XQ8 When was the other machine moved,—when was the machine that's at Minster, moved to Minster?
A. It was moved in October, 1937.

XQ9 Now, have you any of these wing screws about which you are speaking that I can see? A. Have I?

XQ10 Can you produce one of those wing screws such as was put on the machines? A. On our machines?

XQ11 Yes? A. No, I have none.

XQ12 Have you any at Portsmouth? A. No, sir.

XQ13 You have thrown them all away? A. We have never re-ordered any.

XQ14 Where did you get them when you re-ordered them from time to time? A. From Germany.

XQ15 You sent orders over to Germany for more wing screws? A. Yes, sir.

XQ16 How many additional shipments of wing screws did you get from Germany? A. I think two.

XQ17 How many in each shipment? A. That I can't recall.

XQ18 When was it that those orders were placed for those additional wing screws from Germany? A. I can't recall the exact dates; you would have to refer to the shipping invoices.

XQ19 There would be records,—should be records? A. Possibly, yes.

XQ20 Showing the orders of those wing screws from Germany, shouldn't there? A. Yes, sir.

MR. LYMAN: I call upon defendant's counsel to produce any records that they have of orders for wing screws from Germany, for use on those machines.

MR. TOULMIN: We will be very glad to do that; we will look for them and produce them.

By Mr. Lyman:

XQ21 When would you say was the last time that those additional wing screws were ordered from Germany? A. I believe when the mechanic went away to stay, I believe he took an order, the last order along.

XQ22 And when did the mechanic go away to stay? A. He left the 1st. of May, in 1934.

Testimony of Stephen Schnabl.

XQ23 And what was the mechanic's name? A. John Bender.

XQ24 (Spelling) B-e-n-d-e-r, is that right? A. I presume so.

XQ25 When was it that you sawed off those clips from the heel bands? A. I sawed them off in 1936.

XQ26 What part of 1936? A. In December.

XQ27 Were they sawed off before this machine was inspected by the United Shoe Machinery Company people,—Mr. Ryan,—or after? A. I don't know who inspected the machine, but they were sawed off after it had been inspected.

XQ28 After you took that machine downstairs to be inspected? A. Yes sir.

XQ29 How soon after that? A. How soon?

XQ30 How soon after that inspection did you saw off those clips? A. I don't recall whether it was immediately, or within the next week or so.

XQ31 Who told you to saw off those clips? A. Our chief engineer.

XQ32 Mr. Who? A. Mr. Gialdini.

XQ33 He is here now in the room? A. Yes sir.

XQ34 Is that heel band that is now present on the machine out in the hall, the original heel band that came with that machine? A. No, not the original; it is a band like it; it carries the same particular number.

XQ35 Are there on the other machines, the other three machines now used, the same heel bands that came with the machines? A. Absolutely,—not the bands that came with the machines, but the same kind of bands.

XQ36 They have to be replaced at intervals, do they? A. About every six months.

XQ37 And where do you get the new heel bands to replace the old ones? A. In Germany.

XQ38 You send over to Germany for them? A. Yes sir.

XQ39 Do they arrive,—as you buy them, do they arrive with those clips attached to them? A. No, the clips are sheared off.

XQ40 Sheared off in Germany before you get them? A. Yes sir.

XQ41 You don't know how it happens that the people in Germany shear off those clips? A. No, I don't.

XQ42 But you do know that those clips when they arrive, are sheared off? A. Yes sir.

XQ43 That saves you the trouble of sawing them off? A. Since 1937, we got those clips cut off.

Testimony of Stephen Schnabl.

XQ44 How many heel bands have you got since 1937?

A. I think I got ten.

XQ45 Are they in stock now? A. Well, I think I only have one in stock right now in Minster, but we always keep at least one or two in stock.

XQ46 And the one that you have in stock has its clip sawed off? A. Sheared off, yes sir.

XQ47 How does it happen that those clips,—why don't they supply the heel band without any clip at all riveted on? A. I am not a manufacturer; I can't tell you that.

XQ48 Can you imagine any reason why, if you don't want the clip, they should supply you with a part of the clip riveted on, and then the whole thing sawed off?

A. I don't know.

XQ49 That's a mystery to you isn't it? A. No, it is not a mystery.

XQ50 Why should it be done? A. I presume they make their parts over there in mass production to order for the various machines, and I believe that they just refer to the individual machine numbers to see what the definite things are for that particular machine.

XQ51 You think that in this particular machine, the defendant's requirements are that there should be no attachment for the heel band? A. Possibly.

XQ52 You say possibly? A. That would be my opinion.

XQ53 Your position is that that machine works just as well with that heel band clip sawed off, as it did before? A. As far as our product goes, yes.

XQ54 It works just the same way? A. Well, what do you mean by the same way?

XQ55 I will ask you,—does it work the same way? A. It doesn't work the same way; it gives the band a chance to align itself with the shoe, which before it didn't.

XQ56 It gives an equally good result? A. Well, it gives equally good results, yes sir.

XQ57 You haven't any heel bands with the clip attached? A. No sir.

XQ58 Which you could try and demonstrate on the machine in Court and show us how it would operate, if that set screw were in place and the heel band were fastened by this clip? A. I have none.

XQ59 You couldn't show to us that it could possibly act that way, could you,—you have no parts by which you could demonstrate that fact? A. I haven't any parts; you mean I have no heel bands with that clip on?

Testimony of Stephen Schnabl.

XQ60. Yes? A. No.

XQ61 And no wing screw with which such a heel band could be operated? A. No wing screw, no sir.

XQ62 You have none in Portsmouth? A. None in Portsmouth. May I ask you one thing?—you refer, none in Portsmouth, to our plant?

XQ63 Your plant in Portsmouth? A. None in Portsmouth.

XQ64 Just when was it that your superintendent gave you the instructions to take out what you call the bight springs from your machines? A. That, I don't know; he told me to take out the bight springs.

XQ65 Did he give you that instruction orally? A. Yes sir.

XQ66 And you say that was about six months ago? A. Yes sir.

XQ67 That would be in about July? A. About August.

XQ68 About August of 1938? A. Yes sir.

XQ69 Did you keep the springs, the bight springs you took off? A. Yes sir.

XQ70 Can you produce them? A. Why certainly, I have got them in my pocket. (Producing Springs)

MR. LYMAN: I will ask that those springs be marked for identification.

Thereupon, the bight springs referred to, were marked for the purpose of identification as Plaintiff's Exhibit 26.

XQ71 Now, did you take out those bight springs from all four machines at that time? A. Yes sir.

XQ72 Where are the other bight springs? A. I have got them.

XQ73 Have you got them here? A. No, I haven't got them here, but I can produce them.

XQ74 Where are they? A. In my tool box.

XQ75 Out here? A. At home, in the factory.

XQ76 Where did this spring come from? A. That came from Germany there; the original spring.

XQ77 In ordering new springs for those machines, do you refer to the serial number on the machine? A. Yes sir.

XQ78 You have to do that? A. Yes sir, we always order direct from manufacturers, any place.

XQ79 Specifying the serial number of the machine? A. Not any more after that; the only thing we specify now is as per previous invoice.

Testimony of Stephen Schnabl.

XQ80 I wish you would sketch for us on a piece of paper, Mr. Schnabl, the arrangement that there was at the back of the heel band at the time when the clip and the wing screw were in there, so that it attached it to the slide,—can you do that? A. Would you kindly say it again?

XQ81 I want you to show me the relationship of the parts at the back of the heel bands, when the machines were operated as they first came in, with the heel band having it's clip on, and the clip attached by the spring to the slide? A. There was no wing nut back there,—there was a wing screw.

XQ82 Can you show me that? A. You want merely the bottom view, or what do you want?

XQ83 I want to see what happened,—a sketch that will show what happened under those conditions,—what the relationship of the parts was, so that I can see what happened when the rising movement of the last upwiping motion took place? A. Well, if you will be good enough to step over here, so I will know,—I don't know that I understand. You mean would I demonstrate to you over here, or what do you mean,—you mean you want me to show what?

XQ84 In these machines,—this model which I have here, exhibit 8-A, this collection here, as the heel band rises? A. Yes sir.

XQ85 I think it is attached to the mechanism behind it? A. Yes sir.

XQ86 And the mechanism rises with it, is that right? A. Yes sir; this doesn't rise in our machines.

XQ87 What stops it from rising? A. This is just one solid part; it is sawed off right there. (Indicating)

XQ88 Where is that little set screw that you are speaking of? A. That's underneath; if I might turn that over, I can show you right here on this. I can show you on the machine.

XQ89 Do you want me to show it to you now? A. This is not like our machine.

MR. LYMAN: Perhaps you can show it to me after the adjournment then.

THE COURT: Well, the question is withdrawn.

XQ90 Now, with reference to these stops, that you speak of which are on the side of the machine,—are we talking about the same thing?—I am calling your attention to the part which is marked,—

MR. TOULMIN: On this photograph of the Moenus machine, in plaintiff's exhibit 10, at the place marked E. A. But there is no stop in there.

Testimony of Stephen Schnabl.

XQ91 What's the device which is marked with the letter X, that you have? A. This is a screw, a sort of a holding screw.

THE COURT: There were two of those cuts there, I don't know if that's the one or not.

XQ92 You say that you don't recognize that part that I call your attention to? A. No, sir.

XQ93 You say that there was no such part ever on your machines? A. No such part ever on our machines.

XQ94 At any time? A. At any time.

XQ95 And when the machines came, there was nothing but this spring which appears below it there? A. Yes, sir.

XQ96 And no stop of any kind? A. No stop of any kind.

XQ97 And you later, at some time, yourself, supplied that fixed stop that there is on the machine at the present time? A. I didn't make such a statement.

XQ98 I misquoted you? A. I didn't supply any such stops; Mr. Bender, the man from the factory, he was the one that installed those stops.

XQ99 And you saw him do it? A. Yes, sir, because I bent one of them and drilled a hole for that, and he installed it, because the jack,—he drove me off and filed that flat surface where that stop engaged into that bell crank.

XQ100 What is that screw hole in the machine just above it? A. I don't know.

XQ101 You don't understand what that screw hole is for at all? A. I have no idea.

XQ102 And can't imagine what that screw hole is for at all? A. No, sir.

XQ103 The screw hole in the frame of the machine right close to this stop. Have you been employed at Williams Company shoe factory continuously since February, 1934? A. Yes, sir.

XQ104 February 6, 1934, I believe? A. Yes, sir.

XQ105 Have you ever been at the Minster factory of the Portsmouth Company? A. Yes, sir.

XQ106 At the time when you began work for the Williams Company, I think you said there were three of those Moenus heel seat lasters in that place? A. Yes, sir.

XQ107 And one came later? A. Yes, sir, came in February, 1934.

XQ108 The same month when you went there? A. Yes, sir.

Testimony of Stephen Schnabl.

XQ109 Which is this one that we have in the hall outside of the Court room? A. This is one of the older ones,—one of the original three.

XQ110 It was there at the time you came? A. Yes, sir.

XQ111 Are you sure about that? A. I am confident.

At this point an adjournment was taken until 10 o'clock in the morning of the following day.

MORNING SESSION,

FRIDAY, JANUARY 20, 1939.

Court met pursuant to adjournment, counsel being present on behalf of both parties.

Thereupon,

Stephen Schnabl

resumed the stand and testified further, as follows:

By Mr. Lyman:

XQ112 Have you the catalog or the parts list obtained with these machines, the Moenus machines? A. I haven't with me; Colonel Toulmin has them.

MR. LYMAN: I would like to see them please.

MR. TOULMIN: What is it you want?

MR. LYMAN: The catalog or parts list that came with these machines. (Examining booklets produced by Mr. Toulmin) Is that all that came with them?

MR. TOULMIN: As far as I know; that's all that came with them.

XQ113 Is there anything else that came, that has any connection with these machines, other than these documents that Mr. Toulmin has just handed me? A. As far as I know,—yes, there came a book of instructions.

XQ114 Where is the book of instructions? A. I believe they were all sent to Mr. Toulmin.

MR. TOULMIN: Is it a black covered thing, do you think?

A. Yes, that must be it; that refers to the heel seat wipe; that must be it.

MR. TOULMIN: Did a catalog come with it?

A. Yes, they both came together, with the invoice.

MR. TOULMIN: Is this document the one you have in mind?

A. Yes, sir.

Testimony of Stephen Schnabl (Resumed).

MR. LYMAN: I will ask that the parts list and book of instructions be marked for identification, plaintiff's exhibits 27 and 28.

Thereupon, the parts list and book of instructions referred to, were marked respectively, for the purpose of identification, as Plaintiff's Exhibits 27 and 28.

By Mr. Lyman:

XQ115 Was there any other descriptive matter relative to those machines, except these two things? A. Not that I can recall.

XQ116 I show you on one of these pages, a picture that refers to N 21995,—can you find the detail of N 21995? A. Yes, here. (Indicating)

XQ117 What does that say? A. Zugfeder.

XQ118 What does that mean? A. That means expansion spring.

XQ119 Just where in the Williams factory were those first three machines, the Moenus heel seat lasters that were received, set up? A. Sir?

XQ120 Just where in the Williams factory were the first three Moenus heel seat lasters that were received, set up? A. Where were they set up?

XQ121 Where were they set up in the factory? A. That's something I don't know.

XQ122 Hadn't they been set up at the time you arrived there? A. There were two machines, but they were not constructed properly then; the lasting line hadn't been finished; one machine wasn't in operation yet.

XQ123 Two were in operation when you started work there in February, 1934,—February 15th? A. Yes, sir, in February, 1934, February 6th.

XQ124 Another was present there in the factory, but hadn't yet been set up? A. Yes, sir.

XQ125 And the fourth one came in later? A. Yes, sir.

XQ126 What time did the fourth one come in? A. I should judge either the end of February, or the beginning of March,—somewhere thereabouts.

XQ127 Just in what position in the factory were the first two machines that were set up, at the time you arrived? A. What position?

XQ128 Yes,—where in the factory were they? A. They were on the second floor.

XQ129 In what position on the second floor? A. What do you mean,—what position?

Testimony of Stephen Schnabl (Resumed).

XQ130 Were they near the window of the building or near the wall—can you describe the place where they were? A. All of our machines were placed,—they were setting side by side, that is, as near as I can recollect.

XQ131 Where did you set up the third machine, the one that was in the factory, but wasn't set up at the time you started working, alongside the others? A. I can't recall.

XQ132 You don't know where that third machine was put? A. I don't know.

XQ133 Where it was installed? A. It was later installed on the lasting line.

XQ134 It was later installed on the lasting line alongside the other two? A. We had two lines over here, and two machine lines over here. (Indicating)

XQ135 And where was this third machine put? A. On the same floor.

XQ136 Right near the other two? A. Yes, sir.

XQ137 Now, when the fourth machine came in, where was that put? A. That was put on the second floor, too.

XQ138 Right alongside of the other three? A. Yes, after it was uncrated.

XQ139 Did you assist in installing this fourth machine? A. Yes, sir.

XQ140 When was the fourth machine installed or set up, do you remember that? A. It was installed shortly after it arrived.

XQ141 That would be in a few months? A. No, it wasn't a few months; it was a few weeks, but I am not positively certain of that.

XQ142 And the machines, three of them, have continued in use up to the present time in that factory? A. Yes, sir.

XQ143 One of them has been sent to the Minster factory? A. Yes, sir.

XQ144 Did you tell me that the machine we have here in the hall was the fourth of the machines to be received from the Moenus Company, the one that was not received until after you had been there? A. I am fairly certain that's the last machine that we received.

XQ145 You think that this is the last machine that you received? A. I don't want to make a positive statement, but I am fairly certain.

XQ146 Were all four machines alike,—did they all look alike? A. Yes, sir.

XQ147 All the same size? A. Yes, sir.

Testimony of Stephen Schnabl (Resumed).

XQ148 Could you tell one from another by the looks of the machines? A. Well, the machines were identical.

XQ149 I am going to show you this plaintiff's exhibit 25-M, one of the photographs of the machine which was made by the photographer, day before yesterday,—that set screw there, that I asked you about yesterday? A. Yes, sir.

XQ150 What was the set screw doing,—what is it there for? A. That set screw is to keep that binding member in my opinion, from slipping up and down.

XQ151 By the "binding member," you mean what? A. The connecting part between this and this, this underneath piece here. (Indicating)

XQ152 Will you show the Judge what you mean by that,—just point to it? A. This piece here. (The witness indicates the part marked X on the photograph.)

XQ153 This is the part, here? (Indicating) A. Yes, sir.

XQ154 And the set screw, which I mark Y, on this photograph, was removed, and this is the part, X, which you slide up and down on the housing part there? A. No, it doesn't slide.

XQ155 What good does the set screw do then? A. I don't know.

XQ156 What is the set screw for? A. To hold the bands in place, yes, that originally held the band in place.

XQ157 By the bands, do you mean this part, X, that I mark X here? A. No, that band,—this is what held this in position. (Indicating)

XQ158 Explain to the Court please, what you mean by that? A. Originally, there was a clip on our heel bands when those machines came from Germany, and that heel band was attached to this back pressure member, or whatever you may call it, and was connected here with a wing screw.

XQ159 And that wing screw went into a threaded hole in the part which I have marked, X? A. That's still there.

XQ160 Well now, you say that if you remove that set screw, still the part marked X doesn't slide? A. No, sir.

XQ161 I will ask you what the set screw marked Y, is for, any way? A. Just to hold that screw in place.

XQ162 What screw in place? A. That part in place.

Testimony of Stephen Schnabl (Resumed).

XQ163 But you say that part X, will not move in it's housing, any way, set screw or not? A. Then, I don't know then; that's an original part.

XQ164 Will you look at this part which I show you, on one of the pages of this particular book, the part to which I point here and tell me what that number is, please? A. Why, certainly; this is number 220, Zwischenhulse; that means spacer.

XQ165 And where does that go in the machine? A. That goes in here. (The witness points to gear rack on the same page.)

XQ166 These pages don't seem to be numbered? A. The pages are numbered on the bottom,—may I show you? Here's the page, "blatt," means page, 8; that alternates, one illustrated page and one descriptive page. (Referring to Plaintiff's exhibit 27, for identification.)

XQ167 Here's another photograph of the machine that was taken night before last, Exhibit 25-A, with the stop. Please point to that stop that you testified yesterday was installed by Mr. Bender. A. This stop that's behind that spring, yes, that was installed by Bender.

XQ168 Now, there are some file marks upon this lever here, out there in the actual machine, the lever to which I point; what is the original of those file marks? A. Bender put them there to make,—that's a part of this stop, so that it would stop against here, against that rack or whatever you may call it.

XQ169 He filed down the box to this lever to which I am pointing on the photograph, so as to make a seat for the end of this stop? A. That's what I suppose.

XQ170 He did that in 1934? A. Yes; no sir, two machines had that on there before I ever came there; they had installed that before the machines came on line, before the machines were put into operation.

XQ171 On the two? A. Well, as far as I know, yes, on two, they were on there, and on the last one, I helped install it myself, yes, sir.

XQ172 Was that all done before Bender went back to Germany? A. Yes, sir.

XQ173 And that was done,—that must have been before May, 1934? A. Yes, sir.

MR. LYMAN: Have you obtained those bills, or orders for more wing screws that I asked about yesterday?

MR. TOULMIN: We telephoned for them last night, but we haven't been able to get any report; the shop was shut down last night.

Testimony of Stephen Schnabl (Resumed).

RE-DIRECT EXAMINATION

By Mr. Toulmin:

RDQ1 I hand you plaintiff's exhibit No. 27 for identification, and I will ask you to state whether there's any date on this document? A. There is no printed date in there that I can see about here where it usually should be; I don't think there is any.

RDQ2 Look at this one and see if you find a date on this one? I am handing the witness plaintiff's exhibit 28 for identification? A. There's a date here.

RDQ3 What is that date? A. It refers to Zeichnung, a sketch; it says, 16th in the 11th month of 1933.

RDQ4 Do the drawings show anything? A. Yes, the drawing shows the 30th day of the 11th month, 1933, and the man was Vollhardt.

RDQ5 Do you find in this drawing, or in this description, any stop of any sort, in association with the spring,—any side stop? A. I don't find any here, no, sir.

RDQ6 Do you find any such side stop shown or illustrated in the parts catalog, exhibit 27? A. No.

RDQ7 Do you find in this catalog the set screw that was just referred to in the cross examination? A. Which set screw?

RDQ8 That small set screw on the vertical member that Mr. Lyman marked with the letter Y on Exhibit 25-A? A. Oh! here it is; I know what he means; here it is, N 5217.

RDQ9 Now, while we are on that subject, see what the description of it is? A. It says, Stellsschraube dazu; that's the word Gleit-Schlitten.

RDQ10 Now, what does it mean? A. Stellsschraube, Gleit-Schlitten. That means prepare screw in slide; that's what the literal translation would be, what you mean by sled,—the slide; that's the slide that slides in and out.

RDQ11 Last night after you got off the witness stand, you and Mr. Lyman went out in the hall to the defendant's machine, did you not? A. Yes, sir.

RDQ12 Did you take out that set screw? A. No.

RDQ13 This little screw, I mean? A. Yes, I took it out for his inspection.

RDQ14 That was that N 5217? A. Yes, sir.

RDQ15 Did you look at the thread in it to see whether it was a metric thread or a United States thread? A. This is a special thread, with the plunger under it.

RDQ16 What is it, a metric thread or a United States thread? A. They are all metric.

Testimony of Stephen Schnabl (Resumed).

RDQ17 Did you make an attempt while he was out there to pull this sleeve, X, out of the outer sleeve?
A. I did not.

RDQ18. Did you see somebody try it with a screw driver? A. No.

RDQ19 Were they able to get it out? A. No, they said it had been burned off.

RDQ20 Was it free or not? A. It is a sliding member, but it sets in solid, because it is flush at the bottom.

MR. LYMAN: Do you mean that that particular sleeve, X, cannot move down from the position it shows on there?

A. No, it can't move down; that's a fixed position; this is flush.

RDQ21 What Mr. Lyman want's to know is whether this sleeve, X, can go up, inside the outside casing?
A. It can go up.

RDQ22 How far? A. It can't go up if it is not accurate but if that might be loose, it might be.

RDQ23 There is nothing to stop it going up? A. No, nothing to stop it going up.

RDQ24 With reference to the Moenus catalog, plaintiff's exhibit 10, I will call your attention to the first page, and ask you to state whether you find any date in that catalog? A. There it says W D 55; I don't know what that means; 10th month, 1934.

RDQ25 Was that date before or after these machines got to your plant? A. That was after.

RDQ26 Do you find any picture in this Moenus catalog, plaintiff's exhibit 10, of this man you call Bender, the erection man from the factory? A. Yes, there is; that's him. (Indicating) That's the man, because there's only one like him,—he is a horse.

Thereupon, Mr. Stephen Schnabl retired from the witness stand.

Arthur M. Greene, Jr.,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

MR. TOULMIN: Now, if the Court please, as you know, of course, there are two primary defenses to a patent suit. The first one is non-infringement, which Your Honor heard called nothing this week. The sec-

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and one is the one of anticipation,—whether there are any prior patents taken out by other inventors that would anticipate the patent in suit. Your Honor, of course, is familiar with the fact, that many of our patents are found, by more exhaustive examination than the Government can afford to make, to be invalid. We propose with this witness to approach that question directly and quickly. I would have put him on last night, but in view of the fact that the Williams people needed Mr. Schnabl, thought it better to dispose of him and let him go home. I am going to be as helpful as I can to the Court, by using the color scheme as the other side did, with the charts, and I think by confining our efforts directly to the subject of those claims, and to the controversy in the claims, that we can get along better and more expeditiously.

I have had the charts in this binder colored to represent by a uniform coloring system, those parts that are directly involved in this controversy. Your Honor understands that these charts do not show the complete machine, but just those particular parts that we would like to show. If I don't go into a lot of explanation, Your Honor will understand what I am driving at. I think it will be very useful if we just go through the prior art carefully, giving Your Honor an explanation of it, touching only those parts of it that are pertinent and giving you the general run of the thing. And then, I will summarize with this witness, the essential issues so that Your Honor, when you get this case, will have something in there to determine whether you are right or not.

Now, we want to offer in evidence, as defendant's exhibit B, before I start with this witness, a binder, containing a number of such colored illustrations of the parts that are directly involved in this controversy, so that we won't have to take them out of the Court file.

MR. LYMAN: We don't agree that they are accurate. That goes rather to the materiality or pertinency of them, or, the accuracy and weight, rather than to their admissibility.

And the binder containing such colored parts, so offered in evidence, by counsel for defendant, is made part of this record marked **Defendant's Exhibit B.**

MR. TOULMIN: These are photostats, Your Honor, of the patent in question. Now, Your Honor, we filed a number of prior patents that we thought were quite

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pertinent, as the result of our original investigation. We had them here in connection with the interlocutory proceeding. As you may recall, we agree to reduce the claims and the prior art, and I made a statement after that of the prior art, which reduced the prior art to certain listed patents. Now, Mr. Lyman, the patents I have in this prior art volume, are those listed in that statement. I won't stop to call off the numbers right now, but you can verify these in due season, and it may be accepted with that understanding. I have taken this prior art volume, and put our primary colors on those particular parts, so that it will tie up with the rest of the proof, and you won't have to get out of your chair. We offer this volume of prior art patents as defendant's exhibit C.

Thereupon, counsel for defendant offered in evidence, printed copies (bound in one volume) of the following listed patents, and said volume is made part of this record as **Defendant's Exhibit C.**

Copeland, et al	244,714	July 19, 1881
Lombard	524,445	August 14, 1894
Eaton	596,323	December 28, 1897
Brock	601,935	April 5, 1898
Snow	701,412	June 3, 1902
Snow	946,708	January 18, 1910
Plant	958,280	May 17, 1910
Brock	1,002,818	September 12, 1911
Keys	1,023,854	April 23, 1912
Macleod	1,030,519	June 25, 1912
Bayard	1,068,843	July 29, 1913
McFeely	1,129,881	March 2, 1915
Cavanagh	1,130,142	March 2, 1915
Stiggins	1,132,630	March 25, 1915
Brothers	1,135,945	April 13, 1915
McFeely	1,135,958	April 13, 1915
Brock	1,188,616	June 27, 1916
Merrick	1,245,117	October 30, 1917
Pym	1,368,988	February 15, 1921
McFeely	1,558,737	October 27, 1925

MR. TOULMIN: I have a duplicate copy for you, Mr. Lyman. Now, if I seem to hasten a little too much, it is because I want to get these things in. I also would like to offer in evidence, as our exhibit D, the two patents in suit, on which I have put corresponding primary colors for reference by counsel and the Court.

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And the patents in suit, so offered in evidence by counsel for defendant (bound in one folder) McFeely 1,558,737, and Hoyt 1,508,394, are made part of this record marked **Defendant's Exhibit D.**

MR. TOULMIN: I also have here Your Honor, a thing that I have found quite helpful for the District Court, as well as the Court of Appeals. I have taken the photostats of the pertinent prior art and the photostats from the Hoyt patent and blended them up in a binder here, so that you can lay the whole thing out and get a bird's eye view of our concrete position as to these two claims. I want to offer that in evidence as defendant's exhibit E. If that is not strictly correct, you and I can get together and agree about it.

The binder containing such blended display of the pertinent prior art and the Hoyt patent, so offered in evidence by counsel for the defendant, is made part of this record, marked **Defendant's Exhibit E.**

MR. TOULMIN: Now, if the Court please, I think I will introduce these enlarged colored charts to be used as exhibits, and then we can go right straight through the testimony.

The enlarged colored charts so offered in evidence by counsel for defendant, are made part of this record, marked as follows:

Defendant's Exhibit F, Sheet 3, Patent No. 1,558,737, to McFeely.

Defendant's Exhibit G, Sheet 2, Patent No. 1,558,737, to McFeely.

Defendant's Exhibit H, Sheet 1, Patent No. 1,558,737, to McFeely.

Defendant's Exhibit I, Sheet 4, Patent No. 1,558,737, to McFeely.

Defendant's Exhibit J, Illustrative Exhibit based on Copeland Patent No. 244,714.

Defendant's Exhibit K, Illustrative Exhibit from Lombard Patent No. 524,445.

Defendant's Exhibit L, Illustrative chart based on Eaton Patent No. 596,323.

Defendant's Exhibit M, Figure 3 of Eaton Patent No. 596,323.

Defendant's Exhibit N, Figures 5 and 6 of Brock Patent No. 601,935.

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- Defendant's Exhibit O**, Illustrative Exhibit based on Brock Patent No. 601,935.
- Defendant's Exhibit P**, Figure 6 of Snow Patent No. 701,412.
- Defendant's Exhibit Q**, Figure 2 of Snow Patent No. 701,412.
- Defendant's Exhibit R**, Figures 1 and 2 of Snow Patent No. 946,708.
- Defendant's Exhibit S**, Illustrative Exhibit based on Snow Patent No. 946,708.
- Defendant's Exhibit T**, Illustrative Exhibit based on Plant Patent No. 958,280.
- Defendant's Exhibit U**, Figures 21, 22 and 23, of Plant Patent No. 958,280.
- Defendant's Exhibit V**, Figure 5 of Plant Patent No. 958,280.
- Defendant's Exhibit W**, Figure 3 of Brock Patent No. 1,002,818.
- Defendant's Exhibit X**, Illustrative Exhibit from Keyes Patent No. 1,023,854.
- Defendant's Exhibit Y**, Figures 7, 8, 9 and 10 of Keyes Patent No. 1,023,854.
- Defendant's Exhibit Z**, Figure 5 of Keyes Patent No. 1,023,854.
- Defendant's Exhibit A-1**, Illustrative Exhibit based on Macleod Patent No. 1,030,519.
- Defendant's Exhibit B-1**, Figure No. 1 of Bayard Patent No. 1,068,843.
- Defendant's Exhibit C-1**, Figure No. 1 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit D-1**, Figure No. 2 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit E-1**, Figure 8 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit F-1**, Figure 9 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit G-1**, Figure 13 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit H-1**, Figure 18 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit I-1**, Figure 19 of McFeely Patent No. 1,129,881.
- Defendant's Exhibit J-1**, Figure 1, of Cavanagh Patent No. 1,130,142.
- Defendant's Exhibit K-1**, Figure 2, 3 and 4 of Cavanagh Patent No. 1,130,142.
- Defendant's Exhibit L-1**, Copy of view based on Ely Brothers Patent No. 1,135,945.

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Defendant's Exhibit M-1, Figures 9 and 10 of Brock Patent No. 1,188,616.

Defendant's Exhibit N-1, Figures 5 and 6 of Merrick Patent No. 1,245,117.

Defendant's Exhibit O-1, Figures 7 and 8 of Merrick Patent No. 1,245,117.

Defendant's Exhibit P-1, Illustrative Exhibit based on Merrick Patent No. 1,245,117.

Defendant's Exhibit Q-1, Illustrative Exhibit based on Pym Patent No. 1,368,968.

Defendant's Exhibit R-1, Copy of figure from Hoyt Patent No. 1,508,394.

Defendant's Exhibit S-1, Illustrative Exhibit based on McFeely Patent No. 1,558,737.

THE COURT: Of course, this is all subject to objection and cross examination.

DIRECT EXAMINATION.

By Mr. Toulmin:

Q1 State your name and residence? A. Arthur M. Greene, Jr., Princeton, New Jersey.

Q2 And your occupation? A. At present I am Professor of Mechanical Engineering and Dean of the School of Engineering of that University.

Q3 How long have you been in that position? A. I will complete this year my 17th year at Princeton.

Q4 Will you give a brief statement of your educational qualifications for testifying in this case as a mechanical expert? A. I was educated in the Public Schools of Philadelphia, graduating from the Manual Training School in 1889.

MR. LYMAN: I will admit his qualifications.

MR. TOULMIN: I would like to have the record show them, Your Honor.

A (Continued) I then went to the University of Pennsylvania, graduated in 1893, and returned for a graduate year, at the end of which I received my Mechanical Engineer Degree, and then was for one year at the Drexel Institute, seven years as Instructor at the University of Pennsylvania, and then went to the State University of Missouri, as Professor of Mechanical Engineering, where I remained for five years and became Junior Dean of the School of Engineering. I was called to Troy, to the Rensselaer Polytechnic Institute, to inaugurate a School of Mechanical Engineering, a department, rather, following the gift of money from Mrs. Russell Sage. I remained there for fifteen years, and was called to Prince-

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ton to inaugurate an enlargement of their Civil Engineering course, and also a course in the School of Engineering. The University of Pennsylvania honored me in 1917, with the Degree of Doctor of Science, and on leaving the Rensselaer Polytechnic Institute, they were good enough, also, to honor me with the Degree of Doctor of Engineering. During my teaching career, I have taught the subject of mechanics and machine designing, and I have been a member of the Committee of Science and the Arts of the Brookline Institute, Philadelphia, which is concerned with the examination of meritorious inventions, with awards. And, during the last twenty-five years, I have served as an expert in a number of patent cases.

Q5 Now, with special reference to the heel lasting machine of the instant suit, tell the Court what particular investigation you have made in order to properly qualify yourself to discuss this matter here this morning? A. After investigating an original group of patents, and more particularly a typical group selected from that larger group, I studied as many books as I could find on the subject. I also visited shoe factories, as I had never been through those previously. I had seen shoe machines at Fairs, and also in shops along the street, but I had never carefully investigated the shoe manufacture.

Q6 Have you observed the operation of plaintiff's machine like Model A, prior to coming here to testify? A. May I have the question, please?

Q7 Did you observe in operation any machines of the plaintiff, such as it's Model A machine, in operation in a shoe factory before coming here to testify? A. I did not.

Q8 Have you seen the Model A in operation in the factory, that we examined here the other day? A. Model A, no sir.

Q9 Did you see the Model D? A. I did.

Q10 Had you seen the Model D before you came here to testify? A. I did.

Q11 Have you examined the four Moenus machines, or any one of them, such as are out here in the hall, prior to coming here to testify? A. I have.

Q12 Did you observe those machines in operation in the Williams factory? A. I did.

Q13 Have you made any study of the mechanics of those machines, as to their construction and operation? A. A very careful study.

Q14 Now, Doctor Greene, have you studied the patents in suit, so that you can tell the Court whether or not

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you understand them and can explain them? A. I can and do understand them.

Q15 And you have been here during the plaintiff's testimony, have you not? A. I have.

Q16 And you have heard the testimony of their witnesses on the subject of the two patents in suit? A. I certainly have.

Q17 Now, I would like to have you take the McFeely patent in suit as the preliminary thing, devoting yourself to those parts of the patent that are primarily in issue here, and explain to the Court generally, it's operation, with particular attention to the points that you want to bring out, that have to do with the issues here, so that His Honor will have some aid in getting our point of view of this patent. If you will take the patent in suit, of McFeely and do that for us, then, we think it will be helpful? A. May I have the enlarged structure of that McFeely patent in suit?

MR. TOULMIN: I think it will be helpful, if Your Honor will turn to the enlarged copies and follow.

A. (Continued) This McFeely patent in suit, 1,558,737, has it's peculiar form, in order to care for the wiping of shoes and tacking of them, as in an earlier McFeely, but with a different arrangement of parts, to get adjustment in a different way. It also is concerned with the matter of the upwipe, which is not in this case at present, but I have to mention it because of the peculiar feature of the clip which has been mentioned so many times.

With that introduction, I would say that the defendant's exhibit H, which is figure 1, of McFeely 1,558,737, shows the housing of the machine, driven through gears, not shown, a cam well or cam box near the center, having running to it a lead-line from 118 and 121 and other members. On the face of this machine, first shown is the lever, 170, which travels in the front cam face, 172. That particular lever is connected on to a ratchet wheel, 164, and is concerned primarily with drawing the rod, 160, on which is a ratchet back into the heel bands, to produce pressure on the back of the heel band, as the first operation of this machine. You will also see, painted in red, the ratchet wheel pivoted on 86, the ratchet teeth being shown at 94, which is for the purpose of advancing the adjustable support at the back of the band. You will also note the roll, 270, in green, which is intended to move the front wiper and tacker, which cooperate together for adjusting the width at the front. Then, colored blue, is a rod which operates the hold-down, and is driven,—

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MR. LYMAN: Which figure are you on now?

THE COURT: He is still on figure 1.

A. (Continued) I am still on figure 1. It moves the hold-down, and it is in brown, like the wipers going back to the link, 314, on which the wiper operator is pivoted. The spring, right near the center of the machine No. 320, is the operating device for driving the tacks.

I think it would be well now to go to figure 4 of this patent, in which we see the ratchet wheel, at the right we see the ratchet wheel 94, with this detent handle 92, that draws a pinion at the middle of the machine and advances at the part marked 64. I will come back to this patent again, if it pleases the Court, to comment upon its similarity and relation to the claims of the Hoyt patent, but just at present, I think we would save time by not mentioning that. You will note that 64 is a member solid within a frame.

If I can now trouble you to look at figure 2, defendant's exhibit G, we see the rod part in the middle, to which I have referred, and marked 66, driven by the pinion marked 88. Now, at the front of this part, Your Honor, you will find a clip 62, which supports the inner part of the band. And, the patent describes that, starting on page 3, at the last line, line 130,—“this heel clamping means includes a substantially U-shaped integral band 60, of leather or other flexible material having a slotted clip 62 attached to its rear lower edge and supported by and guided for vertically upward movement on the shank of a stud 64 secured to the forward end of a racked slide 66.” Now, as has been brought out by the testimony, there must be vertical, upward movement of this, because, if you will notice, 62 has a bent up portion; but since this patent requires upwiping, which means that that hold-down 200, which is colored blue, must move downward relative to the band, and the back of the band must be supported against that motion. That is, in this patent of McFeely, 1,558,737, that upwipe produces before the side wipe of the wipers, by a downward motion of 200, as called for in the specifications, a motion you have on page 10, beginning at line 53,—“the operation of the described mechanism in lasting and tacking the heel seat is as follows: The parts in the position of rest, are as shown in Figs. 1 and 2 with the rolls engaging the cams of cam wheel 116 as shown in the plot of the cam paths in Fig. 10. In these positions, the hold-down 200 is in its highest position; the wipers and tack holding and driving units are drawn back, and the clamping band is in its fully opened position. The operator mounts

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the last, with its attached upper and insole on the last pin of the jack or standard 148 and may, if necessary, adjust the toe rest 158 properly to elevate the toe end of the last. The standard is then swung backwardly as far as it may be conveniently by hand and the treadle 202." The treadle 202, Your Honor, is shown in figure 1, placed opposite the starting treadle 52. He depresses this treadle 202, which is shown, but we will not look at now,—in figure 9, I believe it is, yes, to position the last by foot.—"the treadle 202 is depressed to bring the insole against the hold-down 200 as illustrated in Fig. 9. The elevation of the contact face of the hold-down is such that the upper face of the insole will be in a plane above the plane of the lower faces of the wiper plates." Now, that means, Your Honor, that if the shoe last is in here, in this first position, you put the bottom of the last over which the leather must be placed, above the level of the wipers which are shown in green. In other words, it is well up in the band. "If a turn shoe is to have its heel seat lasted the heel portion of the sole is lifted to engage with and be turned and held back by the blade 344," which is shown in figure 9, which doesn't come into this. "If necessary because of the shape of the heel end of the shoe, the heel band may be adjusted through the hand lever 90,"—that's the one we just talked about on the side,—"and pinion 88, which in co-operation with the stop 244,"—that stop 244 is an important item, which we will see later,—"will determine the distance of the rear tacks from the edge of the heel seat, and the wipers and side tack holding and driving units may be adjusted through the hand levers 270 as previously described. The stop nut on the rod 222 may also be adjusted, if necessary, to change the amount of lowering and lifting movement of the hold-down and to vary its initial position. The last and upper are now positioned to be operated upon by the machine. Accordingly, the treadle 52 is depressed, throwing in the clutch and starting the revolution of the cam shaft 24. At the beginning of the revolution of shaft 24 (as will be seen most clearly from the cam plots in Fig. 10) the cam wheel 116 will first bring the rise in the cam surface 172 against the roll 171 of lever 170," that's the one to which I have called your attention on the outside, in Figure 1, which is this outer figure in yellow,—"to start the preliminary backward power movement of the standard and last previously described to bring the rear end face of the shoe substantially against the band before the band begins to close." That's the first operation, to force it to

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the back. "After the completion of this movement, the cam surface 172 holds the lever 170 and its operating parts in the same position until the end of the cycle," when this closes down; this machine stays there until the very end;—"when the low part of the cam surface causes the lever and its ratchet-operating arm 166 to return to initial position under the influence of a suitable spring. At a point during this movement of the rise in the cam surface 172 against roll 171, the first rise in the cam surface 118 will operate against roll 121 to swing the bell crank lever 120." May I interrupt and call the attention of the Court to the bell crank lever 120, which, in this figure 2, is shaded purple. It is a lever on which is a roller, 121, rolling in the cam path of cam 118, and by means of a sector out of the bell crank lever, moves a gear wheel, which, in turn, moves 128, the part marked 128 in figure 2, and the sliding member marked 130, within which is a heavy spring.

Beginning again at that quotation,—“at a point during this movement of the rise in the cam surface 172 against roll 171, the first rise in the cam surface 118 will operate against roll 121 to swing the bell crank lever 120 in a direction to move the racked plate 130 rearwardly, closing through the previously described connections, the heel band to clamp and conform the upper tightly about the heel end of the last and substantially co-incidentally, through bell crank lever 180 and its described operating connections swinging backwardly the jack standard and holding the last and shoe upper locked back against the heel clamping band.” That provides there, not only for the first preliminary cam motion that holds it back, but co-operatingly, the device which clamps the band, also moves the jack back toward the band, and also forces it upward against the hold-down. “With the extremity of the shoe upper hard pressed against the clamping band, the heel clamping and jack positioning movement, terminating subsequently to the end of the preliminary yieldingly effected backward movement of the jack and before the first or breaking down movement of the wiper plates 254. Since the hold-down is being moved downwardly, in a manner to be described, to upwipe the upper, cam operated movement of rod 190 to lift the jack standard is lost motion taken up by compression of the spring 191,”—that little spring we see in figure 9. “As the cam surface 118 operates through roll 121 and its bell crank lever to clamp the end of the shoe about the last, a rise in cam surface 174,”—that’s shown at the end of figure 2,—it is shown

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right out here, (indicating) and this is the hold-down moving cam that I wish to come to. (Indicating) "A rise in the cam surface 174 operates against roll 221 and lever 220 to move the hold-down 200 downwardly, forcing, in turn, the heel end of the shoe and last downward relatively to the heel gripping band 60 which presses against the moving shoe and acts to upwipe the shoe upper over the sides of the last closely to conform the upper to the sides of the last in a manner similar to the upwiping action of the toe wiper plates on 'bed' lasting machines when the toe head with the wipers moves upwardly, relatively to the toe end of the shoe." So, Your Honor, we will see that the little clip wasn't put in there by McFeely accidentally. It has a story, as I have read you from the patent, and it has to be there for the proper co-operation of the parts disclosed in this patent.

Q18 For what reason does it have to be in there?

A. Because there's a strong pressure between the band and the heel, caused by the cam connection from the cam 118, and then when the cam 174, through it's co-operating parts, forces the hold-down to a level which the patent says is below the level of the wipers, so that the level of the top of the last is below the level of the wipers, that requires a force, not only at the start, but at the back.

Q19 And what relation has that to the feature of the McFeely patent in suit, that the invention has to the upwipe? A. How is that?

Q20 What bearing does the necessity of having the clip, 62,—I will put it another way,—what's the reason for having the back support, 62, shown in Figure 6, for the heel band 60, with respect to the upwiping operation?

A. It is absolutely necessary to have it there to support the pressure brought about by this upwiping.

Q21 Now, go ahead with your explanation? A. Now, Your Honor, there is one other part which I wish to clear up. I am not sure that it was clear to you. I am sure it was on the model of the actual structure of the McFeely machine, the Model A, when you saw the movement of wipers, differing from the movement of the tackers.

THE COURT: Oh! Yes.

A. You saw that very clearly, but if it is not bothering you too much, I would like to refer,—I would like to turn, if you please, to Figure 7 on sheet 6.

Q22 Sheet 5, you mean? A. Sheet 5, Figure 7. In this particular position, the Court will note that the spring 244, forces the bands, 240,—

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Q23 Just a minute, Doctor,—is that 244, that lead-line? A. No, 236 is the spring,—forces the band, 240, as far to the right as it can go, as far to the left. I would call your attention to the part marked 246, which is the arm from the frame of the machine, through which the band, 244, passes a trip. 244 is the stationary band, and you will see from this picture that the wiper can't retract any further because if it does, it will have to move the band tacker, and the tacker can't move to the right, because of the band. So, we now have it in its extreme right-hand position. At the proper time, the cam, operating the part 224, which is the extreme right number moving it to the left, proceeds to move both the wiper and the tacker coincidently, because the spring 236 permits that. Now, when the band 244, strikes the other end of the opening 242, the tacker can't proceed any further to the left, and, as a result, it stays there, and any further motion it makes, as the specifications say, forces the wiper over to bend the leather its full amount. In that condition or position, the tacker would be covered up by the wiper on this end unit, as he calls this middle one. On the retraction, the first thing that happens is the wiper is retracted until it releases the pressure on the band, 244, against the right-hand end of 242, and then they move, two together, as you see here thereafter in the machine. Now, that's done the second time. The third time, however, the motions of the tacker and wiper are such that the motion is not greater than that represented by the opening in the stop, 242. Both tacker and wiper go together; the tacker doesn't cover the wiper now, and the tacks can be driven. The operation is primarily to push the wiper in its full amount and then retract it, at which time, you see, the tacker rises a thirty-second of an inch, and then you take another one of those wipes, you push it down flat and retract the full amount, and then on the third, you bring it in just far enough to put your tacks where you want them.

Now, in the inside or corner wiper, as he calls them, which is shown in figure 3, on defendant's exhibit F-1, you will note that the corner tacker and wiper are forced outward by the spring, 290, as has been explained by Mr. McNulty properly. If the motion as the actuating member, 226, at the back of this figure is made, Your Honor, before this, or rather, as this part marked 286, comes toward the last, the stop nuts, 298, jam-nuts on the rod, 296, bring the tacker to rest, although the wiper continues into it, because it is driven by the bell crank lever, 272, and the pinion, 274. Now, that happens twice. On

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the third stroke, which is only a half stroke, we don't get the stroke long enough,—we may get it long enough,—but practically it is arranged so that in the last whole stroke, the jam-nut, 298, comes up to the edge of the housing, stopping the tacker, and, at the same time, the wiper is stopped.

Now, as correctly explained to the Court by Mr. McNulty, the part, 270, co-operates with a pinion, 260, moving rack, and adjusts the wiper and also the tacker. But, the Court will note that there is a pivot wiper colored green on this figure,—it is not numbered,—it is wiper 254. You will notice the wiper, 254, is connected by a pivot to the member on which the jam is travelling. And, therefore, as they come toward the center and forward, there must be a circular motion between these parts. And, as a result, it would be impossible to have these end tacks, at least, to say nothing of the others, rigid with the wiper, and for this reason, Your Honor, in my opinion, Mr. McNulty has drawn his claim, relating to those wipers, as a wiper and tacker having co-operative movement. They couldn't move together in this disclosure. And, those are the two things, Your Honor, which I would like to call your attention to before proceeding further.

Q24 Now, Doctor Greene, before you go further into the McFeely patent, it occurs to me, that it will be helpful for you to show the Court the movement of closing the outer ends of the heel bands of this McFeely patent, with respect to its construction and power device thereon, to trace that movement through, looking particularly there at figure 4 of that patent?

A. Your Honor, looking at figure 4 of the patent, which is defendant's exhibit I-1, you will see at the top of the figure, the movement, 120, of the sector which is driven by the cam. The teeth of that sector mesh with the teeth of the pinion, 124, driving a pinion, 128, on the shaft, 126, and reciprocating a block, which is connected to the part, 134, known as the equalizer, in the patent, through a spring. Then, as the operation of tightening the band against the last, the upper on the last, requires an inward motion of the end of the band, you will see that the ends of the bell crank lever, 181, must come together, which, of course, necessitates the pulling up of the equalizer, 134, and with it, the two bars, 136, which have racks on their ends, which pull on the bell crank lever, 138, and force inward the ends of the bands. Your Honor will note that there is a spring, 140, at the end, connecting the bell crank lever to the portion joining

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the end of the link, within that bar, to another member, which forces the supports, the side supports of the band inward. You will also note the spring to which I referred. Now, as the Court has already mentioned, whenever we have a device such as this, or the one in plaintiff's exhibit 8-A, which closes the jaws of the band to a much smaller amount than the thickness of the shoe last at that point, there must be some yielding means. In the hand lasting or bed lasting machine, the hand is the yielding means. In this one, there are two yielding means, one at the lower point, and one at the upper point.

Q25 Where is the yielding means at the lower point?

A. The spring, 100, and also, the spring within the casing above. Now, Your Honor,—

Q26 Now, just a minute, Doctor,—what is the number of the upper spring in this view, figure 4, so His Honor can have that pointed out to him? A. 128; the coil spring No. 132.

Q27 132, is it? A. No, that is not the coil spring; that's the spring merely at the top.

Q28 I mean the heavy spring,—what's the number of that,—my copy looks like 128? A. The spring is not clear in here. I think 128 is the pinion. There's a spring within the part marked 130. Now, on the question as to which one of these springs moves first,—this is a fact, of course, but academically important,—which of these springs moves first is dependent on the tightness or strength of the spring. If 100 has been tightened up by the nut, the jam-nut, 98, to a point such that it will hold under, we will say, at this point, 100, or 500 pounds, and the other one, in taking into account the various leverages, represents at the same time less force, then the upper one, will yield, and the lower one, will become unyielding. In any machine, it is necessary to produce a push and pull first.

Then you must have certain unyielding parts, and of course, to guard against the overrunning of the machine, there must be some yielding part. It would be a very dangerous thing to have no yielding part in a machine of this kind, even if set up merely for one particular size. If, however, it is necessary to go to the spring for the place at which you wish to start your unyielding parts, there is absolutely no reason why you couldn't say there wasn't any unyielding parts between the end of the part, 96, and the part at the end of the heel band.

Q29 While we are on figure 4, where does the power in operating that particular part start, and from what does it get its power? A. The operating member,

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in my opinion, is that which operates it. 120, at the top of the figure is the end of the treadle lever shown in defendant's exhibit G, on the end of which is a roller, 121. This roller travels over the face of the cam, 118, operating the gear wheels, operating the part colored purple, within which there's a heavy spring, and then the equalizer bar, 134, is connected. Then, from that point, we have the parts shown in figure 4. The origin of the power from the shaft, is, of course, the cam surface and its co-operating parts.

At this point a short recess was taken, after which the witness, Arthur M. Greene, Jr., resumed the witness stand and testified further, as follows:

A. (Continued) We were talking of the springs, Your Honor, that control the motion of the parts, and I have just been out to examine the Model A machine, and I find the spring, as shown in the patent, on the model, and I also note that the spring is not a very heavy one.

Q30 Which spring are you referring to? A. I am now referring to the spring, 100, in figure 4, defendant's exhibit I. If that's a light spring, then the function is to keep the pressure outward, if clamping has to be done of any force, but then, you will note that the rod is forced inward, so that the shoulder on the pivot cross head at the end of the rod, comes in contact with the housing, and in that case, the connection would be quite similar to the connection in Model D, that is, the joint between that pin in Model D would be moved outward. It is normally against the surface in all conditions. And, in that case, we have in this patent, the same thing which the Hoyt patent discloses.

Q31 And what is that? A. That's supposed to be the unyielding connection as interpreted by the plaintiff in this case. In the defendant's construction, the operating mechanism is the cam, of course, and I would like to call the attention of the Court, for reference, to a description of that particular part, which begins at the bottom of page 4. It starts at line 130 with the bell crank lever and goes completely through the surfaces and going on, and then also the portion on page 4.

Q32 What line, Doctor? A. Beginning at line 102; the description includes the bell crank lever, 120, which is driving from the cam, 118, taking it back always to the cam, as the operating source.

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Q33 Are you in agreement with Mr. McNulty that the operating part is the little cross equalizer in figure 4, which is marked, 134? A. No, I am not.

Q34 Does that furnish any power of any sort, 134? A. Well, it is a transferor.

Q35 Well, does it furnish any power? A. No, it does not, only by transmission.

Q36 It transmits power like the bell crank, 86, would transmit it? A. Yes, and like the link between two cars of a railroad train connected to the locomotive; the source of power, of course, is the locomotive.

Q37 Go ahead, Doctor? A. In looking at this figure 4, also, I would like to call the attention of the Court to the part marked, 70, which is attached to the spring and presses against the band, adjacent to the bight. According to the Hoyt patent, the bight band is defined in it to be at the rear portion, and he calls for that yielding member pressing outward, adjacent to the bight of the band. And, in anticipation of what we will discuss later, I think it might be well, just to call the attention of the Court to that, that is, that in this McFeely patent in suit, the elements of the cam in suit, of the Hoyt patent, are present.

MR. TOULMIN: Your Honor understands, we are pleading the second McFeely patent, that is, the one in suit against the Hoyt, because it is a later date. It might be a little confusing.

THE COURT: Later, you are going to discuss specifically the Hoyt patent?

MR. TOULMIN: Yes, I am going to go into that, but he just mentioned it in passing.

A. (Continued)-When I mentioned the McFeely patent in suit, I should have said the McFeely patent in suit, 1,558,737.

Q38 Have you finished discussing the McFeely patent, now, Doctor? A. No: I would like to call the attention of the Court to a few other things in this McFeely patent. In order to accomplish all that Mr. McFeely wished to accomplish with his earlier patent, he had to add additional cams, called by some a cam track and a cam wheel, and you will notice in this figure 2, defendant's exhibit G, there's one cam, 118, another one, 228, another one, 172, and another one, 174. The 172 merely drives the initial hold back, which continues until the end. That's the one right there, (indicating) that's new over the old one. Then in figure 9, Your Honor, in this patent, you will note the jack, or support for the heel of the laster, which is numbered,

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148, in patent 1,558,737, is forced upward by a rack at the bottom, 154. There is no spring pressure in this at all. There is a small spring, 191, on the rod, 190, that's merely to prevent breaking, and does, of course, exert some force, but in the earlier McFeely patent, you will find this spring at that point, and also a spring within the housing, which does the uplifting. That is, in the discussion of uplifting in this machine, you must realize that there is a mechanical means by cams and rods, which not only operates the hold-down, but also operates the tackings. Of course, the part, 344, in that patent, is not important at all; it is just to care for a turned shoe.

Q39 Now, if you have completed your additional explanation of McFeely, will you turn for the moment, to the Hoyt patent,—have you any charts for me on that?
A. Yes, I have some charts. In the Hoyt patent, 1,508,394, the claims refer to elements, the U-shaped band, or operating member, an unyielding connection between said member and band for forcing the ends of the band against the shoe. Such unyielding members could not be used between the operating member and the band. At the end, as the Court pointed out, a spring or some yielding means is necessary. The next element is a separate yielding means operating on each side of the band adjacent to the bight, which are the parts represented by the number 240, the two arms, which are pressed by the springs, within the little cylinder, 232, against the member, 246, to normally produce pressure in toward the bands adjacent to the bight. The members, 240, in this case, are supposed to be freely mounted, or, as is said here,—

THE COURT: Loosely mounted.

A. (Continued) Loosely mounted, and of course, the claims are drafted in that direction. Now, the second claim is, means for supporting the band, which is best shown and described in the patent very clearly on figure 6, sheet 4. At the lower part of that page in figure 6, the support is the part attached at 142, and the statement is made on page 4, line 74, "in order to afford support for the band at its rear end or, in other words, at the bight of the band, a clip 142 is riveted to the band at such point. The clip 142 is in turn carried by a stud shaft or post 144 loosely mounted in a carrier 146 slidable in a guideway on the head 4." The elements in that claim are devices comprising arms loosely mounted on the supporting means. Now, Your Honor, it might seem to you that we are quibbling over the support, but since the support is spoken of in this case as that which sup-

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ports the loosely mounted arms, where this patent recites the word "support," it must have referred to that particular part, and not to the side support, 167. The claims recite definite things, and refer to these loose arms as mounted on the supporting means. Now, they surely are not mounted out at the end, and for that reason, I feel that Mr. Hoyt, in this patent, definitely recites the fact that the supporting means about which he is talking is the pivot, 144.

THE COURT: I wonder if we couldn't refer to this Model 8 there?

A. Yes, Referring now to Model 8-A, we have in this figure, in this model, two arms, 532 and 533, which, if free to move, could be called loosely mounted, and the claims say, loosely mounted on the supporting means. And, for that reason, I take this whole thing, which is earlier described as supporting means, to be the supporting means described, not these outer clips. To say that these clips do not support it, would be foolish. They do support it. But in this patent, the words "supporting means," and the description of supporting means, refers to this backward part.

Q40 Do you want to continue with this Hoyt patent?

A. I think I have covered the claim.

Q41 In this Hoyt patent, Doctor Greene, what do you understand to be the element in the claims, and in the specifications and drawings, that is referred to as the operating member, which is used for the purpose of imparting operative force to the extreme outer ends of the heel bands? Will you trace the line of power, as applied? A. Referring now to figure 2 of this patent, 1,508,394, the power to force the bands against the last and upper, must originate in the cam, which drives the arms, 200, and consequently, in this picture, I would say, that the operating member must be the cam, and its associated parts connected to the part marked, 200, in figure 2.

Q42 Well, if that is the operating member, do you have a yielding connection between that operating member and the outer end of the band? A. You do.

Q43 In that particular, it is the same as the McFeely patent in suit, just ahead of it, is that right? A. Yes, indeed.

Q44 The only distinction between the two being, that in the early McFeely patent, there is the addition of a light spring 100, at the extreme ends of the arms? A. Yes.

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Q45 In this Hoyt patent, do you agree with Mr. McNulty, that the operating member is equalizer, 188?
A. Oh! no.

Q46 Will you adopt the same answers you made as to the McFeely patent? A. Oh! yes, absolutely.

Q47 Your position is the same as to this same equalizer of the Hoyt, as you expressed it in connection with the prior McFeely patent? A. Yes, the patent calls it an equalizer; it doesn't call it an operating member.

Q48 And the large spring is necessary for the successful operation of both the Hoyt and McFeely patents in suit,—is that correct? A. Yes; I would like to add that if for any reason that part could be termed as the operating member, you might go all the way down until you came to the last pin, and of course, it is not an operating member.

Q49 In this Hoyt patent, do you find any wipers?
A. There are no wipers.

Q50 Is this Hoyt patent for the purpose of heel seat lasting? A. No, it is merely,—

Q51 Where is that illustrated? A. It is merely to attach the outer sole, and that's indicated very nicely, I think, on figures 4, 5 and 6 of sheet 4. There's the hold-down,—

Q52 Also look at figure 8? A. Yes, and figure 8, also. And, I wish to say that I draw attention to these figures, because, if you will notice, in all of them, there is an inclined part to the tacker holder; which travels with that tacker holder, over the outer sole, and holds it down against the wiped and tacked last below, in order to have a firm attachment. The figure 8, to which you refer, shows the outer sole, C, placed on top of the inner sole, B, and the lasting and upper, A, which is between, and the picture indicates a nail or a staple or tack, which has been drawn in and clinched over.

Q53 Then the Hoyt machine is not for the purpose of heel seat lasting, but for putting on the outer sole?
A. Putting it on,—it is a tacker. The title of this patent is, "fastening-inserting machine."

Q54 Have you any other comments on either the Hoyt or the McFeely, before we go to the prior art?
A. I have not.

Q55 Now, Doctor Greene, will you be good enough to turn to the prior art patents, and compare those patents and their disclosures, with the patents in suit, first taking up the prior art, with respect to the McFeely patent in suit, and pointing out to the Court where you find, if you do, the disclosures in the prior art, that were later

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made in the McFeely patent in suit, and in doing so, direct yourself particularly to the question of the claims involved in the McFeely patent in suit? A. Your Honor, the first patent to which we wish to call your attention is that to Copeland, et al., 244,714, of 1881, July 19th, which is 56 years ago.

Q56 Now, Doctor Greene, you have an exhibit here of this, and you have, as you said, I believe, started with Copeland. Before you start, Doctor Greene, will you also refer, in addition to the Copeland patent, to the exhibit J, and tell us what that is supposed to illustrate, that is,—is that found in the patent, or is it an illustrative exhibit? A. Your Honor, this patent was selected, because of it's age, and because it indicates the method used in the Moenus machine for attaching the tackers to the wipers. The perspective drawing, exhibit J, has been prepared to bring out the co-operating parts. In this device, as described in the patent, which is a very short one, we have a laster with upper mounted on a jack, which is carried on a slidable base, and is forced against,—

Q57 Will you give the colors, Doctor, as you go along; it will help us to follow? A. I beg your pardon.

Q58 Will you give the colors as you are testifying? A. The band is colored orange, and is supported on the end, which rises from the surface of the lower support colored red. Mounted above this is a pair of wipers. Connected directly to those wipers, are tackers, which are made in two parts, pivoted at the center and moved co-operatively, as they would have to, being definitely connected, and then, there is a tack supply, which comes in from the end. The wipers are moved inward, when the red part of the figure, with the jack, is moved to the right, and the rollers force the tackers in. And, of course, the relative movement, Your Honor, is the same as if the jack were stationary and the wipers moved to the left, that is, as far as the lasting is concerned, it is a longitudinal and perpendicular movement, just as you have in the Moenus machine. Now, the part that is brown, represents the tackers, and they are depressed, as stated in the patent, by a treadle, if operated by man, or by a cam, if operated by machinery. I refer merely for the record, Your Honor, to,—

THE COURT: Does this patent say operable by hand or by power?

A. As far as the picture is concerned, you can't tell, but the wording of the patent, which I would like to read, states on page 2, beginning at line 22,—“the folding

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plates are provided with a series of holes or nozzles, c, which are arranged a little back from the edge of the plates, and in these holes or nozzles a corresponding series or group of drivers, E, are arranged to be reciprocated by any suitable means; and we describe as ~~can~~ the attachment of the drivers to the hinged blocks, c', and the use of the rod d, in connection with a treadle when operated by foot-power, and a cam or lever when operated by motive power, for reciprocating said blocks. That is, the picture of the patent does not show any machine operation, but the patent definitely describes the relation between tackers and wipers. And, in claim 4 of this patent, which I would like to read, the claim is,—"In a machine for lasting the uppers of boots and shoes, the combination of the last, a jack for supporting it, the toe or heel folding plates, and a gang or group of fastening-driving devices supported and adapted to be positioned by the movement of the lasting-plates, all substantially as and for the purposes described."

Now, that's exactly the construction which Moenus has used, and it is not brought in here to show that McFeely has this, unless it is said that McFeely's operation, which is not directly connected, but must be co-operative because of the relative movement,—is the equivalent of Moenus. The patent also states on page 2, line 102,—“The heel-lasting devices, being secured at the end of the sliding plate C, are, by the movement of the toe-lasting plates inwardly caused to assume, automatically, the proper position which the apparatus should bear at the commencement of the lasting, that is, the upper holding devices are thrown forward, and the folding plates are opened.” That is, this indicates that the motion of the machine prepares it for the proper relation between the laster and wiper. In this machine, therefore, I feel that we have definitely, wipers, predetermined adjustment by the part c',—means to effect the movement of the wipers. We don't have tackers co-operatively, or means to maintain them in that relation, if the McFeely scheme is used, but if the McFeely can possibly cover a definite connection between wipers and tackers, this has those two elements. This says there may be power effected movement. Of course, the power would have to be in addition to that shown here. So, I feel that this claim, if the McFeely is to be interpreted, as covering the Moenus construction, meets all of the elements of both claims 6 and 85. This is a very old patent, Your Honor, and there's only one of these pat-

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entees, Mr. Brock I have met in several of the later patents, which we have discussed, which they have assigned to the United Shoe Machinery Company. Looking at the tacker, you will see that there are springs mounted on the back of the red part, which keep the wipers in contact with the roller, and when the part is retracted to the left, to withdraw the wipers, roller to withdraw the shoe, and these springs maintain the wipers in contact with this operating means.

Q59 Will you call the Court's attention to the last paragraph on page 2 of this patent, in the right-hand column, and comment upon that, if you wish? A. There is something in the left-hand column, too, that I would like to advert to. In the right-hand column, first, we read on page 2, line 115,—“Of course, we do not confine ourselves in the practice of this invention to the arrangement of the folding-plates and fastening-driving devices herein described, or to the use of fastening-driving devices adapted to drive only the ‘Copeland tack strip,’ so called, but we may use in combination with the folding-plates, any arrangement of devices for driving fastenings of any description desirable, and may give them any suitable location and movement in relation to the lasting-plates, the essential features being that the devices for driving-fastenings shall be so constructed and located that they can be brought in position either by their movement in relation to the last, or the movement of the last in relation to them, and the fastenings driven simultaneously, or by single impulse, while the lasting plates are holding the turned in edge upon the surface of the insole.” On page 3, line 7,—

Q60 Before you do that, will you read the next sentence, following what you read? A. “The advantages of this invention are that the toe and heel, or either, can be lasted much more rapidly than by the ordinary toe and heel-lasting mechanism.” I also wish to refer to a few lines at the bottom of page 2, in the first column, in which it states that the devices used for driving-fastenings can be arranged in gangs or groups, which means that they could do, as in a later patent, where with one tacker unit, they have put in five or six units at one time.

THE COURT: While we are on this subject, are you going into the approval of these anticipated patents, such as this?

MR. TOULMIN: No, Your Honor, unless they challenge them. If they challenge them, we will go into

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them, but otherwise, under the law, they stand on their face, as good anticipations. We have many authorities on that. We are not going to do that unless it becomes necessary.

Thereupon, an adjournment was taken until 2:00 o'clock in the afternoon of the same day.

AFTERNOON SESSION

FRIDAY, JANUARY 20, 1939.

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resumed the witness stand and testified further as follows:

DIRECT EXAMINATION

By Mr. Toulmin:

Q61 Have you finished the Copeland patent, Doctor Greene? A. I have.

Q62 Will you take up the next patent, and call His Honor's attention to what you want to take up next?

A. The next patent is that to Lombard, 524,445, as in defendant's exhibit K, which is a isometric or perspective drawing, to show the parts operating this disclosure. In the figure, exhibit K, you will notice the wipers marked, 30, and colored green. These are moved by the pistons, 10, within the cylinder, 8, by means of the handle marked operating lever, 12. The last is placed on the jack, and the last holders, 19, are adjusted against the sides of the last. This adjustment controls the position of the cross bar at the front of the machine, extending from the front last holder and marked,—“means for automatically positioning wipers,” and bearing the numbers in the patent, 23, 25, 29. This rod, as it is moved from the axis of the last, moves the plate, as it is shown on the drawing, so that there is a small distance for that plate to travel from the green upstanding member, to the right of the plate, until it hits the serrated edge, against which it is resting in the picture. This distance is controlled by the width of the last that determines the amount of movement of the small pinions, shown attached to the green cross bar, at which they will start to turn in the wiper member, 30, by means of the teeth on the back of that sector, so that, in a broad last, the member is so far down, that motion of the small pinions,

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which can occur after the stoppage by this member, is very slight, and consequently, the member travels a very short distance. That member is so near the top of the serrated edge, that the teeth begin to turn very shortly after the pistons and plunger move, so that a great amount of motion is transmitted from the rack, marked "wiper rack," through the pinions to the wiper teeth, which are forming a sector, and a great amount of motion is made by the wipers.

You will note in the figure, that there is a pawl, 13, on the operating lever, 12. This pawl moves the cylinder, 9, which forces the heel band, 26, colored orange, to meet the last and upper. After that has reached this, the colored purple member to the front of the picture, near the detent, which goes into a ratchet bar, is arranged to hold the piston supporting the band, while the inner piston, 10, completes its stroke to move the wipers forwardly and inwardly. The picture shows the side pressure members, 25, which you will note are connected to the lower part of the bands, and are unyielding, and as we go back from the purple colored parts in this construction, until we reach the operating lever, which moves both the band members and the wiper members. You will see that there is throughout this system, unyielding members until we finally get to the operating lever, which is, of course, the operating member in this case, handled by the operator of the machine.

The primary purpose of this patent,—one of the primary purposes,—is to show the arrangement of the rack, pinion and sector, on the back of the wiper, as an arrangement similar, as far as these three members are concerned,—not their co-operation,—to that used by Moenus in his structure. We will see in the next patent, however, the true arrangement, which Moenus has, in securing the preliminary adjustment of his wiper plates. I would like to point out the support with the band, which is colored red, mounted on the side pressure member, colored purple, the other purple parts of the figure, and the green parts which operate the wipers, and also predetermine their position.

Q63 Just continue, Doctor, from patent to patent,—that will be the quicker way, I think? A. The next patent to which I would like to call the attention of the Court is that to Eaton, 596,323, as shown by defendant's exhibits L and M. I feel that it would be better first to look at the isometric drawing, as the co-operation of the parts is a little clearer. In this figure, the wipers,

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b⁶, colored green and attached to a device called the wiper cam, which is a plate travelling within a circled groove, so that the motion of that cam, relative to the plate called wiper carrier, b⁵, must be circular, and the center of that circle is about, substantially, the point of intersection of the two wiper plates, shown very clearly in the picture. The wiper cam is connected by links shown in the picture, to a rack block, marked on the figure as one of the members of the wiper actuating means. This block with its rack, meshes with the small pinion. This pinion, in turn meshes with another rack at the center of the device. This latter rack, is threaded to a spindle marked on this figure, "predetermined adjusting means for wipers."

If the handle actuated to this spindle is turned, I think Your Honor will clearly see that the central rack is pulled to the right or left. This immediately causes the pinion to turn, and as that pinion is mounted on a pivot or shaft within the wiper carrier, the turning of it causes the back plate shown in this figure, to advance to the left or to the right. If it goes to the right, you will clearly see that it pulls the wiper cam back toward the right, and since it is mounted within a circular groove, the only motion it can have relative to the wiper carrier, is that of the arc of a circle, and consequently, the wipers are open. Now, if the motion is in the other direction, the wipers would be closed. This all occurs before the operating lever is moved, so that this is a predetermined setting of the wiper plates by manual means. It is preliminary to motion, and after setting it, then the operating lever, b⁹, is moved to the left, causing the wiper plates to advance, because of the wiper carrier being attached there, and then on account of the circular arc, the wiper plates must close in, as in this motion of the wiper plates, the central rack bar is now stationary, and the motion of the plate causes the small pinion to turn, which causes the back rack to advance beneath the wiper carrier, and causes this rotation.

I would like to call the attention of the Court to the fact that this, although different in shape, is mechanically, and as a machine, exactly similar to that used by Moenus in principle, that is, Moenus has a pair of rack bars which are advanced by a large handle, which you see in the side of the machine running to two carriers. Those two carriers run to such rack bars as these. Then, they have the pinion sector, which causes the wiper plates to turn, as you advance the wiper housing.

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Exhibit M, is merely the patent drawing of this, and the plate, which is called here, wiper carrier, has been overlooked. Now, if the wiper carrier is moved to the right in exhibit M, which is figure 3, of the patent 596,323, the rack b^{24} is stationary. The moving of the plate to the right causes the little pinion b^{21} , to turn clockwise, that causes b^{20} to move faster and then the plate, which causes the bar b^{23} to move forward, and so rotate the wiper carrier near the cam of the carrier plate, so closing the wipers, as they advance to the right. Now, if the handle b^{27} be turned, then the member b^{24} , takes a new position. The wipers are originally open, more open than they are closed.

Q64 I might ask you one question there, Doctor, that I am not quite clear about, I will admit; it may help us. We have been talking about the forward end of the heel bands, and at the bight of the heel bands,—do you have in this construction any inelastic construction between the ends of the heel bands and any presser members in this construction, on exhibit L? A. The colored heel band is shown, marked toe band, which is supported by the red member marked detent support, and then on the side, we have a pressure member, that is called side pressure member. The patent drawings, Your Honor, if you would refer to them for just one moment, show in figures,—this is 524,445,—this shows in figures 5 and 6, the band, 26, and the pressure member, 27, attached to the rod carrier and on turning to figure,—

Q65 Are you looking at the Eaton now, or Lombard? A. We are still on Lombard,—on the Eaton figure; on the Lombard figure, the band 26,—

Q66 Are you referring to the Eaton patent? A. I did refer, Mr. Toulmin, to the Eaton patent. In the Eaton patent, on figures 3 and 4, we find the yellow heel bands with the pressure members, pressing in on the supports. These pressure members being operated by a cross link, and then in figure 4, we note that the back of the band is supported on a pivot, which is colored red.

Q67 Do you have any pressure on the bight of that band? A. This is attached to the bight.

Q68 Now, go to the next patent, then, Doctor? A. The next patent to which I direct the Court's attention, is that to Brock, 601,935. As shown in defendant's exhibit O, in isometric form,—and parts of that structure are shown in defendant's exhibit N,—which is a reproduction of figures 5 and 6 of the patent. Referring now to exhibit O, it will be noted that there is a jack, m^1 ,

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supporting the last, N, and the last, N, is placed within the heel band, of orange color d¹, on the outside of which is the heel band support, indicated in red, which is fastened at the bight of that band into a supporting member. Then, outside of the heel band, we find the side pressure members d¹. These pressure members, d¹, are indicated in exhibit N, figure 5. And the Court will see in the isometric drawing of exhibit O, that this part, which is provided at the point marked pivot for side pressure member, d³, has an arm, through which the bight or bolt, e¹, figure 6, of exhibit N, passes and those two parts are pivoted together by the pin shown on exhibit N, marked d⁸.

So that, we have co-operating together in exhibit O, the bar, which is called side pressure member, made up of parts pivoted together and held in any given position by the spring. These co-operating parts around the spring being shown in exhibit O, by the parts marked, "adjustment for side pressure member and wiper roller." Now, if Your Honor please, you will find in figure 6 of exhibit N, roller, marked d², and this roller which is mounted on a pivot, is the roller over which a curved arm of the wiper cam travels. The back roller is shown in position marked d², "roller for moving wipers." This cooperates with the curved part, marked "wiper cam," which is connected to the wiper, f³. So that, if these rollers have moved, the wipers are initially changed in position. They, of course, open or close the wipers, which are provided at the center, shown in the figure at the end of the green bar, which is the operating bar for the wipers. Now, if that bar is moved by the operating lever, as it actually is, after the pin of that operating lever reaches the end of the opening in the bar, marked "wiper actuator," f³, any advance will cause the cam end of the wiper to move in a circular arc, to this center, so that the wipers will have a forward and circular inward motion, to wipe over the upper against the last. Now, this pin as shown in exhibit N, is an operation of two parts, which becomes unitary on account of the spring wing nuts, e³, which are provided at the front pawl of the part D on figure 5; of exhibit N, marked on exhibit O, as "pivot for side pressure member."

This means, of course, that as we open or close the member on which the spring is mounted, and called "adjustment for side pressure member and wiper roller," that moves the pivot pin, through which the wipers move, and consequently it will change its position. Now, the

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movement of the operating lever, moves the pin, marked on the figure f^o, "means for positioning wipers and clamping heel band." That is, as the handle of the operating lever, f^o, is moved to the left, the first thing that happens is, that this lower pin, moves through cam slots, shown as e¹, on exhibit N, separating these pressure members, producing pressure on the band at the two sides, and, as soon as sufficient pressure is applied, the wiper actuator is moved so far to the left that the pin on top of it, to which I have already referred, strikes the wiper actuator, and the wipers begin to move.

This exhibit O shows very clearly, the wipers, the manual adjustment of the wipers, the means to move them, the band which is the support of the last, the pressure on the opposite sides of the band that supports on the side the means for producing this pressure, as well as the wiping mechanism. The predetermined location of the wipers will be found on page 1, line 68. "The principal object of my invention is the production of a lasting machine wherein the lasting devices, whether in the form of wiper-plates or otherwise and whether located at the heel, toe, or elsewhere, may be predeterminately positioned at the same distance from the outside of the last whatever be the shape, size or width of the last." On page 3, line 119, we find the following,—“The shifting of the positioning devices to adapt themselves to different angles of lasts acts through the roller-studs d^o, to automatically shift the wiper plates also into positions in alinement with the median line of the last, so that they, as shown in Fig. 8, will move forward and back uniformly at opposite sides of the last.”

On page 4, line 45, we find this,—“Thus in the present embodiment of my invention the positioning devices by varying the starting positions of the wipers necessarily vary the limits of the inward or lasting movements thereof, and by thus varying the lasting movements of the wipers or lasting devices insure in advance, that is, predeterminately,—the positioning of the said devices at the same distance inwardly from the sides of the last, whatever be the width of the latter, and this position or distance is nevertheless predeterminate, whether such position be regarded as the most inward position of the wipers or any intermediate position into which they may be moved or backed during the return movement of the wipers, for into whatever position they may be moved such position will always be the same relatively to the sides of the last for both wipers or lasting devices, and

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such position in each case is fixed in advance or predetermined by the positioning devices."

The next patent, Your Honor, is that to Snow; 701,412, as illustrated in defendant's exhibits P and Q. The primary purpose of this patent, as far as this case is concerned, is to show in exhibit Q, where unyielding members were needed to force outward or inward a part, that the members, 42, in exhibit Q, are unyielding members, pivoted at 41, exhibited at the back at 43, and the cross bar, 44, which is shown in exhibit P, is connected through a movable part a¹, to the end lever marked 12. This purple part is the part which forces the bands in at the sides. You will note that we have colored the member, 12, both purple and green, since it has both purposes at the start. After the band, however, has been held at the proper place, the lever, 48, moves the member 49, so that further motion of the handle, 12, moves the wipers forward and inward, the band being held, as shown on exhibit P, by the detent, 45, in that ratcheted bar.

It is also well to note that this drawing shows,—I am now talking about exhibit Q,—at 22, along the lower edge of the wiper plate, a thumb catch, by which the end of the wiper plate can be taken out and moved to the other side, if you change from right to left. This could be said to be a predetermined arrangement of the wipers. Of course, it is not the same as the screwed part, but it really is a predetermined method of changing the initial position of those wipers. The wipers, Your Honor, are pulled together, inward, as they move forward, by the rollers, 17, to which the cam slides, 16, and the wiper plates move.

Q69 In this patent to Snow, Doctor, do you find any means of supporting the back of that heel band? A. Yes, there is a support at the back of the heel band marked 32, on exhibit P, and this is continued downward through the clip, to a point near the lower part of the band. In the exhibit marked Q, you haven't the set band. Now, if we go to the patent, you have there tackers shown on figure 3 of the patent itself,—it is sheet 2, figure 3, of patent 701,412,—the pin, to which I have referred,—marked 32,—fits into the central part, and the other figure shows the method by which it is connected to the heel band. Figure 4, while you are looking at this sheet 2, shows more clearly the method of removing the front of the wiper marked R, and taking it over to the other side, reversing it and using it on the left.

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We now come to another Snow patent, 946,708, as shown in defendant's exhibits S and R. I am not sure, Your Honor, but this structure is very similar in my own mind, to the drawing, or the photographs which the plaintiff introduced, and I think are their exhibit 1. If you will recall, there was a bed lasting machine, and it looks quite similar, although I am not sure that it is. In this machine, as disclosed in the patent, referring now to exhibit S, of the defendant, there is a wiper, 40, moved by the operating lever, 48, on the wiper, and then a heel band, colored orange, mounted on the chain which has its side pressure members that are moved by the operating rod for the band.

If you will now turn to exhibit R, you will find that this member, 24, is connected by a spring and linkage, to the bell crank lever, 26, which may be operated by a cam. As we look at this, we see that there is a band supported at the bight with side pressure members that are non-yielding throughout until you get to the spring on the lower part of 24. This being a machine controlled movement by the bell crank lever, 26, moving into the position shown by the slotted and dotted points, there must be, of course, a spring connection, a yielding connection between. And from the stop members over to this operating part, we have the spring between operating member, 46, and the other part, but up to the spring, everything is constructed, so that it will transmit both tension and operation. If you look now at the exhibit S,—

Q70 Just a minute, Doctor, right there,—how does this construction with the unyielding connections at the outer ends of the heel bands, and the spring adjacent to the bar, concerning mechanical power source,—compare with the construction you have mentioned in the Hoyt patent that we have been discussing? A. It is the same thing, the same as the Hoyt patent.

Q71 All right; go ahead? A. If we now look at exhibit S, we will see that there are corner pressure members, 30, which are bent members moving over pins, as shown in exhibit R, at point 33, and moving up a wedge shaped member, 35, which is mounted on the cross bar, 20. These members, 30, 35, cross bar, 20, member 24, produce a pressure at points adjacent to the bight of the band. The member which does this, is freely moving through the pins, to adjust the pressure to various forms of heel last, so that in this patent, we have disclosed, as far as the heel band is concerned, a support at the rear end of the band, a pressure member at the side, applying

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pressure above the bottom of the bands, operating means to apply this pressure, and also, freely moving members, producing pressure at point adjacent to the bight of the band. Coming now to the wiper, we find that the wiper, 40, is moved by the wiper operating lever, 48, through the cross member, colored green, and the wiper cam, also colored green, so that as this wiper advances, it closes in over the last of the shoe, to wipe down the upper.

In this disclosure we see clearly represented the U-shaped band, the unyielding connections, as far back as the yielding member, separate yielding means adjacent to the bight of the band, and means to support the band and pressure to the wipers, which can be moved so as to wipe down the upper over the last.

The next patent is that to Plant, 958,280, defendant's exhibits T, U and V. Referring first to exhibit T, the operating lever, 9, moves the wiper member, which has within it, circled slots, through which pins, attached to a plate, pass, and as forward motion is given to this wiper, it is caused to move inwardly as well. The exhibit also shows heel band colored yellow, with the heel support, red, side pressure member, 104, in purple color, carried over to the operating bar for band, 109. Now, if we look at exhibit V, we find that the bar called operating bar for band, 109, has a spring attachment, 110, which is moved by the lever, 111. In this case, we have side pressure on the bands, from unyielding members, back as far as this spring.

Noticing now in either exhibit U, the pin connection, 198, at the bight of the band, controlled by the pinion, 199, or, in exhibit V, the support, 101, at the bight of the band, held in position by the set screw, 103, and moreover, in exhibit U, if we go to the bottom of it, we find the support extending out over the bottom; 186, and we have in this, a band, supported, in the words of Hoyt, at the bight, which is adjustable, and then pressure is applied at the sides of the band by these colored bars, purple, which are solid as far as the spring.

Looking at exhibit U, we find in figure 23, at the bottom of that exhibit, the part, 188, which extends out and has 186, below it, in the upper figure, and then we have the side supports, 183, which are not numbered in the top, however, but the rivets, or supports attaching that side support to the bands are shown.

The figure, as shown in exhibit T, also, has indicated at the left, the predetermined adjusting means for the wiper, designated in the patent, as parts 69, 70 and 71. By moving the handle, after lifting the pin at the center,

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and shifting the handle to one of the other holes shown in that view, we can predetermine the position of the wipers, as shown in this drawing, and also very clearly shown in the patent on sheet 11, figure 18, of patent 958,280. In this figure, 18, the bell crank lever, —practically it has a handle, 69, attached to it, can be moved from position 70 at one center, over to the other pin holes, marked 71. In doing that, the front edge of the wiper assumes one of the curves shown over in the front of the figure. Right under the number, 50, is a dot and dash line, indicating the extreme position, and then the solid line represents one of the other positions.

This disclosure gives wipers with manual adjustment, method of moving the wipers, U-band, the support for the last, the moving adjustable parts, and the opposite side supports, side pressure members above the lower edge, means for adjusting and to operate the pressure members, as well as the wiping mechanism.

Q72 Is this a power machine, Doctor Greene, employing cams? A. There is a cam, and the figure indicates power means for accomplishing parts of the action of this machine. There are certain parts which I have not described, which were in the case originally, but we have not referred to them.

Q73 Don't go outside of what I wanted to call His Honor's attention to. You say this is a power machine, —it has cams for controlling the sequence of the operation, is that correct? A. Yes, they control part of the things. Of course, the handles are independent of this part, but the cams do control certain of the operations.

Q74 Go ahead? A. The next patent to Brock, 1,002,818, as shown by defendant's exhibit W, is used in connection with the later Pym patent, and I will refer to it again at that time. It is used in the Brock patent 1,188,616, and of course, in that patent, this particular structure is covered only, so that it is well to keep this one in mind when we come to that patent. The patent discloses a yellow band, or orange band, 146, with a supporting member, in red 270, which is connected at the end to the operating member, 194. And, it will be noted, that in this pressure member, alternations can be made by the nuts on the two sides, enabling you to advance or retract the support from the center line of the laster. Then, there is an unyielding member, which extends from 194 down to the cross bar 190, which is attached to the proper member at the center part, 108, of the patent.

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If the Court will please turn to figure 2, on sheet 1, of this patent, you will see the method of supporting the band corners, the outer corners of the band. There is a hook member, 272, which is formed on the up-turned member, 275, which enables the heel band itself to move in that support, whenever the configuration of the last, as it comes closer to the center, would raise the heel band, and require greater length relatively than the member outside. Of course, then, after that, with this straightened out in the last, the adjoining member would be longer if not of smaller radius, and so, if the configuration is changed in any way, that band will be there to move outward. The band is carried as you will see in figure 1, of sheet 1, by a support at the bight, with the member, 271, which fits into a hole. Although probably used in this position, it is perfectly possible to adjust it otherwise; there would be no need of having it extend as shown. The driving member for this structure will be seen when we come to the later patent, which is Brock 1,188,616.

This patent shows the U band. The support for the last is not indicated, but of course, to use it, there would have to be only the movable adjustable member, which is the support, the side support, the pressure members on the side, and the operating devices for the side pressure members. But there is no wiper mechanism shown in this, although on a scientific approach, we will see the wiper mechanism. And also, in that other patent, we may find that power means could be applied.

The next patent is to Keyes 1,023,854, for a device to act at the forward end of the heel, and to drive two tacks only in the lasting position of the welt, as shown in figure 6, on sheet 3. The two black dots are the tacks driven by this operation. The tacker is shown best in defendant's exhibit X, which is in the frame of the machine, shown in figure 1, of the patent, but is moved inwardly by means of the brown pinion. At the proper time a cam, a clutch is moved, so that a positive stroke is taken by bars to drive down the two tacks in each one of these tackers. The part, 60, is a wiper, and part 50, is also a wiper, to force the member beneath the welt. Looking at this exhibit X, we see the pink members or outer arms, also pink, just inside of the gear wheels, 8. To see the connection of these parts, we turn to exhibit Z, in which the pinion part, to which I have just referred, is marked 10, and as it is turned by the rack member, it causes the bell crank lever, 15, to force in the side mem-

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bers of the bands, marked 36. - This is done simultaneously on the two sides of the shoe, and at the same time, this is happening, the brown part on the shaft, 10, is moving the wiper and tacker into proper position.

Now, these are shown nicely on exhibit Y, in figure 8, on which we have marked green the wiper part, marked purple the pressure part; the band clamp, or rather, the band, is marked orange, and the supporting means is marked red. In both exhibits, Z and Y, there is a support which is adjustable at the bight of the band: There are side pressure members bringing in the proper pressure control, by the spring 20. The picture also shows a hold-down, 68, which co-operates with the jack, 65. The particular feature of this patent is the fact that the tackers on the machine operate, or are associated with the wipers, and there are pressure members, which are applied to the side of the heel band, which is supported at the bight, by an adjustable member.

Q75 Before you leave this patent, Doctor Greene, will you tell us whether there is any means of fixing adjustment between the wiper and the tacker; if so, please point it out? A. The tacker has to drive its tack through the wiper, and therefore, there could be no adjustment; they must move together. If you look at figure 8, the tacker member,—it looks like 150, in each of those figures,—has to pass down through the member called the wiper, 60, and if there was any relative movement, that tack couldn't be driven. The whole part, though,—looking now at exhibit X,—is moved by the pinion to which I have referred earlier, that moves the tacker inward, and of course, with it, the wiper, 60, must move, that is, here, we have association of the two together.

Q76 May I ask whether there is any nut, bolt or slot to permit of some adjustment between them before they begin to operate? I call your attention to figure 2 of the patent? A. There is adjustment, but wait,—the adjustment, in my opinion, is to allow the wiper and tacker to go in further over the last, but in order to drive the tacks into the part of the upper beneath that wiper, there would have to be a hole through the wiper to allow the tacks to pass.

MR. LYMAN: May I ask that the witness state again what the principle purpose of the citation is. He has stated, but I didn't get it down, and we don't have a transcript of the reporter's notes?

Q77 Doctor Greene, will you re-state what the principle purpose for this reference is, that is, you are using

Testimony of Arthur M. Greene, Jr. (Resumed).

this patent primarily to show what? A. The patent is primarily used to show wipers, adjustment for the same, the movement of the wipers, as indicated in figure 8,—the tackers co-operating with them in fixed relation, however, as in the case of Copeland and Moenus,—a U-shaped means to maintain them in the relative position, U-shaped heel bands, and movable adjusting member attached to the bight side supports and pressure members on the side, applying pressure above the bottom, means to operate these pressure members, a hold-down, and in this machine, also, we have power means to operate the machine from the shaft 85, and operation of the wipers on the side pressure members.

Q78. All right, Doctor, go ahead with the next one now? A. The next patent to Macleod, 1,030,519, is given on defendant's exhibit A-1, which is an isometric drawing prepared from the patent drawings. This shows the yellow heel band, or orange heel band, with the supporting members in red, and supported at the bight of the band with side pressure members that are equalized by part marked, 22, "means for equalizing top and bottom side pressure." There is an operating plunger, 31, attached to a cross head, 33, which, through links, drives the slide bar, 36, and forces the end members marked top and bottom side pressure members,—outward. The patent shows the unyielding members running back to the forward yielding part of the operating plunger. Of course, that is not indicated here. The support for the jack is indicated in the patent; the support for the opposite sides are shown by the clips marked "heel band support," 14. There are means to operate the pressure members. The drawing, A-1, indicates very clearly the various pivoted joints. And, also, the slide bar, 36, has on its face, a wedge shaped surface, which forces the side pressure members inward, as they are caused to descend in figure 1, or to move in this exhibit A-1, to the left.

The next patent, 1,068,843, to Bayard shows tackers, 8, to which the wipers beneath them are attached, so that the wipers and tackers move together. And then at the front of the group of tackers, a tacker operated by hand for the driving of a particular tack to which to attach the binding wire that is driven by means of a handle, 34. But this tacker is attached to the toe wipers, 16. This patent has been introduced to show the direct connection of the tacker units and wiper plate especially for the main operation, and also this auxiliary end driving operation. The figure of defendant's exhibit

Testimony of Arthur M. Greene, Jr. (Resumed).

B-1, referring to Bayard 1,068,843, shows the hold-down in blue, and shows, also, the main wiper plate, but the tackers have been overlooked on the front of this drawing. The specifications on page 1, line 95 state,—“It is contemplated that the machine shall be organized to come to rest with the side clamps closed against the sides of the shoe and the automatically actuated in-swinging tack carrying arms 8 at the sides of the machine in their tack inserting positions over the shoe.” And then, on the next page, on page 2, line 32, the specifications say,—“The lasting plate is carried automatically by its carrying arm 8 transversely of the shoe into approximate lasting position over the shoe bottom.” That is, the carrying arm, 8, stops the tacking arm, or tacking device, and also the lasting plate.

The next patent offered, Your Honor, is the McFeely patent, 1,129,881. I will refer to figure 1 on this defendant's exhibit C-1. In figure 1, on this patent, there is shown the tackers in brown. Indicated in green, but also later shown to you in more detail on one of the later figures, are the adjusting springs which control the motion of the tackers and wipers attached at the bight, and attached at the ends of the band. There's also a small green mark on the cam block, which indicates the cam roller moving the wipers. You will also see, colored red, and labelled at the center, 690, the method of adjusting the support at the back, which fit just as in the Model A,—that same little tacker was there, the same as you have on exhibit 8-A. Now, in yellow, the numbers 46, 44, 43, 47, 42 and 41, are the parts of the apparatus which hold the jack into the band, and also in co-operation with the spring, 3, lift the jack upward against the hold-down.

We next come to defendant's exhibit D-1, which is figure 2, in which much more detail is given.

Q79 Doctor, I suggest at this point, if you will indulge me, that if you take the folded charts from the other proof that I handed up this morning, you can lay those out in front of you because they give a comparison between the McFeely patents, first and second? A. Starting now, with the comparative question, Your Honor, you will notice in this patent pivoted at 63, a bell crank lever, which presses against the track which is numbered, 64. The end of that bell crank lever, at the left, meshes with a gear wheel, on the shaft of which is a small pinion, that drives the purple part, marked 61. On the lower part of that reciprocating member, is the

Testimony of Arthur M. Greene, Jr. (Resumed).

bell crank lever, 46, which controls the upward motion of the jack, as well as the inward motion. Now, this co-operation is exactly the same, in the patent in suit. There is this lever,—there is the roller,—there is the pair of gears, and there is the purple member, 61. (Indicating) However, there is no spring in this member to distribute the yielding pressure, and we will see that is cared for in another way. There is a spring shown, which merely keeps the member against the sector and pinion in a definite way. This purple member has attached to it the equalizer, 60, just as in the patent in suit. The number of the one in the patent in suit, is 134. We have here 134 on the patent in suit, and here we have a number 121, which is the same as the pin on this other arm. It is pinioned at about the same place, and it is geared to a member marked 130. Then behind 130, you will notice the small spring, 132, of the patent in suit, takes the place of this larger spring, in length, for the same purpose. Now, the bar, 134, is the same as the bar 60, and then this little bell crank lever, 180, on the patent in suit, takes the place of the bell crank lever, 46. There is some difference in that spring. The spring, as I called it to your attention this morning, was omitted in this patent,—was omitted in the other,—but the bell crank lever is there, the double racked surface block is there, and so we could go on. But I think it might be advisable to follow out the comparative members, rather than to finish this discussion.

THE COURT: You would like to continue straight on through?

A: Yes, I think it might be advisable, if Your Honor please. If you would look at defendant's exhibit F-1;—

THE COURT: It is going to be a hard job; there are no separate exhibit numbers on these, you see.

A. Taking figure 18, Your Honor, we have in that figure,—this is on the McFeely patent 1,129,881, or defendant's exhibit H-1, we have the equalizer bar, 60.

THE COURT: Now, can you refer to the other patents, too?

A. Yes, figure 4, take the exhibit H-1, figure 18, of McFeely 1,129,881, and defendant's exhibit I, figure 4 of the McFeely patent, 1,558,737, and we have in each case an equalizer. In the patent in suit, the equalizer is 134; in the early McFeely patent, 1,129,881, it is number 60. If we come down to the side members, 136 of the patent in suit, corresponds to 59, in the early McFeely. If we come to the bell crank lever, 86 in the

Testimony of Arthur M. Greene, Jr. (Resumed).

patent in suit, corresponds to 54, in the early McFeely. If we come to the end pressure members, 694, on the early McFeely, 1,129,881 corresponds to the end clamps, 92, in the patent in suit.

I would now call the attention of the Court to the fact that in McFeely 1,129,881, the pinion, 61, of figure 18, exhibit H-1, is directly connected to this bar, and there is no yielding means as in the McFeely patent in suit, in which the pinion 128, drives a bar, which is connected to the equalizer, through a spring. This necessitated Mr. McFeely in his earlier patent, adding yielding means, as by the spring, 695, in this figure, to care for the pressure which he desired to produce on the side of his last, when in a lasting position. There is a slight spring, as was said this morning, in figure 4, of the defendant's exhibit I, which is yielding until the parts come in contact, and to protect the machine, the upper stroke is used. While on this figure 18, you will note at the back an adjustable stop, 692, which is moved by the ratchet wheel, 691, just as in the patent in suit.

Now, in this particular figure, 18, Your Honor, there is no band down around the heel, although in figure 19 of the patent, defendant's exhibit I-1, there is a band which connects by a lever. Now, Mr. McFeely in this patent, makes a very clear statement about his heel band.

At this point a short recess was taken, after which the witness, Arthur M. Green, Jr., resumed the witness stand and testified further as follows:

A. (Continued) Your Honor, I was looking for the statement on page 4 of the McFeely patent 1,129,881. Perhaps, it is not very important, but beginning at line 64, he says,—“Any other mechanism suitable for clamping the heel portion of the upper materials to the last may be used instead of that above described,” that is, everything. Those three descriptions of the band, supported by an elastic pawl, or cord, are shown in figure 19, the method shown in figure 18, and the method shown in figure 9. Now, compare these still further with the patent in suit. Each one of them has the hold-down. The hold-down on the McFeely patent is 100, marked in blue on exhibit I, and F-1, and in the patent in suit, it is marked, 200, I believe. Now, in the McFeely patent 1,129,881, as shown in the defendant's exhibit I-1, the defendant's exhibit H-1, and also the defendant's exhibit F-1, the member 691-692,

Testimony of Arthur M. Greene, Jr. (Resumed).

is called the back stop. Then, adjustable by the rigid 691, you will note that the elastic spring pulling on the cords, support the bands, that should the last be removed the bands will follow out, lifting the back stop. If, however, the back stop be adjustable differently, it will position the end pressure members, relative to the back of the last, just as they are set in the patent in suit. The support by being moved forward or back, determines the point in the length of the shoe at which the side pressure members come in the early McFeely 1,129,881, and the same thing happens through this back stop. But, this back stop in the early McFeely, 1,129,881, doesn't have any upwipe to support, and therefore, there is no need for a definite support at the back, as called for in the patent. The adjustment, however, called for and mentioned in the McFeely, is identical with the adjustment of the early McFeely patent, 1,129,881.

In this figure 19 of the McFeely patent, defendant's exhibit I-1, I would like to call the attention of the Court to the end pressure members and adjacent to them, members which have pressure outward, or it may be said, adjacent to the bight, because they are nearer than the outer parts, and then, finally at the back, we find this back stop. It has no function, except that of forcing the last into a particular position. And, if the removal of the clip on the patent in suit, makes any patent come under that, because it is a back stop and not a support for the downward vertical movement, then this McFeely patent 1,129,881, certainly has that element here. That is, the back stop positions the last, relative to the side pressure members.

Now, in this figure 19, again, it has been said that the equalizer, 60 has no yielding means behind it. It must have a yielding means, otherwise the machine would be broken. The side members, adjacent to the bight, also have spring members which allow it to yield, and the back stop may be adjusted as in the patent in suit, by the ratchet working on 691.

We have now traced through the purple part, which is operated in each of the McFeely patents by a face cam on the cam wheel, and in each of these patents that same cam operates the hold-up and hold-back.

We will now take up the movement of the wipers and tackers. We will refer to figure 2, in the patent in suit, which is defendant's exhibit G, and figure 2 of the McFeely patent 1,129,881, defendant's exhibit D-1. In each of these, Your Honor, the cam roller, which is

Testimony of Arthur McGreene, Jr. (Resumed).

76, in 1,129,881, is the same as the gear roller, 226 in the patent in suit. In each of these a sliding member is moved by that cam roller. The cam roller in the McFeely patent 1,129,881, operates both the wipers and tackers. I see before me a large drawing, which I might refer to.

Q80 I would prefer not to refer to that; I think it is not yet offered in evidence, and I want to follow out this system? A. Well then, referring to figure 13, which I have here, defendant's exhibit G-1, and right beside it, is figure 3 of 1,558,737, defendant's exhibit F-1. Now, in the McFeely 1,129,881, the roller, 76 moves the bar, 78, and with it the side bars, containing the racks. Those side bars in the McFeely patent are numbered 92 or 91; they are half opened on the view we are looking at. There they are, the bar colored green and having racks at the ends. The motion is then transmitted through the bell crank levers to the small pinions, which operate to move the lower parts inwardly, the 95 member or 93 inwardly, at the same time that the central member, 120 is forced downward. Your Honor will see, painted green, or marked green, the end of the plate, which has on it a member, 71 a curved member which runs over to the side member, 70. So that then the wiper, the upper wiper, 72 is forced downward, the link, 71 moves the member 70 downward, and also because they are on a slotted, dove-tailed arrangement, they can move downward freely over the part into their support. At the same time that they move downward, however, through this pinion to which I have referred, they are forced inward.

Now the quarter or corner tackers, which are numbered 96, are forced inward by the spring, 98 just as in the patent in suit, and that spring forces them against the back of the wiper, 71 just as in the patent in suit. But, in this patent, however, there is no separate retractor motion of this particular member, and so there is no limit, of course. But, on the members marked 72 at the center, and the member marked 70 at the side, there is a member marked 83 at the end of which is an inclined surface, meeting another member marked 84. That member, 84 has within it a circular, arcuate groove, 842 in which there is a pin, 850 which pin is connected to the wiper, 72 and, in a similar way, at the end of the wipers on the side, a corresponding arrangement there, of a pin marked at that place, 840, in the same way that the other one is attached to the wiper. And,

Testimony of Arthur M. Greene, Jr. (Resumed).

if we allow the member, 84 to turn on the pin, which is mounted there, you can easily see that the pin, 84 as it is drawn on backward to the wiper, is retracted a slight distance, so that the tacker can drive, without interference of the wiper.

Now, the member marked 87, is a spring which comes down on the inclined surface, and there puts friction on this member, 84 which, by the way, is pinned by the cross hatched pin to the base of the tacker. We can change the amount of friction between those two inclined surfaces and so regulate the amount of motion or retraction of the wiper to the tacker. I would like to read what Mr. McFeely says about that relation. On page 5, or rather starting on page 4, at line 126, speaking about the wipers, he says: "These devices receive their movements from the cam block, 65 before mentioned and shown in Fig. 2, which has a cam path 75 in which stands a roll 76 on a slide 78 that is connected by an equalizer 80 with bars 82, see Fig. 13, and also carries the rigid forwardly projecting arm 83. This arm 83 has a yielding connection with the wiper plate 72 provided by the following arrangement: The arm 83 has a beveled end face which abuts against a similar face on a displaceable member 84 that is pivoted to a slide 85 and by which the wiper 72 is actuated through the stud 840 and sub-slide 850. The member 84 has a beveled upper face at 86 upon which rests a beveled plunger 87 carried in the slide 85 and pressed upon by a heavy spring 88, see Figs. 2 and 13. The spring plunger maintains the members 83, 84 normally in the relation shown in Fig. 13, but permits the member 84 to turn and the movement of the wiper 72 to cease when resistance to such movement overbalances the tension of the spring 88. Normally however the wiper will overcome any resistance offered by the work and complete its stroke into predetermined position over the last bottom to wipe the upper into position to be tacked." Then follows the description of the tacking. Oh! I must continue. "The tacking is effected by mechanisms, to be more fully described and each of which includes a tack block 120 carried by the slide 85 and having a depending lip or stop 122 to meet the side of the last, or the heel band that embraces the last, and position the tack blocks for tacks to be inserted at a definite distance from the edge of the shoe bottom. When this stop 122 arrests the movement of the slide 85 the beveled faces of members 83, 84 wedge sidewise

Testimony of Arthur M. Greene, Jr. (Resumed).

against the influence of spring 88. The member 84 has a cam slot 842 into which the stud 840 of the sub-slide or wiper slide 850 projects and when member 84 is wedged sidewise as described the cam slot 842 acts on the stud 840 to retract the wiper slide and wiper slightly with relation to the shoe and with relation to the tack block so as to permit the tacks to be driven into a portion of the upper which has been wiped in and pressed down by the wipers to smooth and prepare it for the reception of the tacks. The machine thus automatically follows in this respect the well known and advantageous procedure of the operator of manually actuated bed lasting machines who 'backs up' his wipers preparatory to tacking the heel seat. The members 83, 84 have co-operating lugs 89 by which member 84 is returned to its initial position when member 83 is retracted." Now, on page 5, still, beginning at line 82, he says,—“The construction and arrangement of the parts just described provides that movement will be transmitted from the cam path 75 to the wiper plate 72 and through that plate and the links 71 to the wiper plates 70 to advance the wipers. This carries the wiper 72 over the heel seat of the shoe and moves the wipers 70 endwise in blocks 950 and the links forwardly with relation to the plungers 96. Simultaneously with this forward movement motion is transmitted through the angle levers 90 and the described, independently yielding connections to close the side wipers and the corner wipers or links 71 inwardly over the heel seat, thus gathering the upper inwardly in substantially radial lines over the heel seat. The provision for effecting the forward movement and the inward movement from each side of the shoe through independently yielding connections permits the wiping or breaking down means to adapt or conform itself to the contour of each shoe and this is facilitated by the flexible connection 71 between the plates 70, 72, which act at the ends and back of the heel seat. The independently yielding connections also facilitate the adaptation of the wipers to the shape and position of right and left shoes which differ greatly when made on crooked lasts. This however, is largely provided for by arranging the jack so that the shoe can swing laterally about the axis of the spindle 10 to center both right and left shoes in the lasting devices.”

Your Honor, there is just one more thing to bring out in this case, which is shown on the isometric draw-

Testimony of Arthur M. Greene, Jr. (Resumed).

ing of the patent in exhibit E-1; of the defendant's figure 8. In this figure, in figure 8, you will see attached under the jack block, at the end.—and you see the same thing shown at the middle of the jack block in another figure,—from the end of the jack block, there is a hanging part on this rod, which comes underneath the wiper plate, comes against the shoe, or the bands, rather, controlling the exact distance that the tacks must be driven from that band. Now, in this arrangement, we have that member and spring 88, 87, 86 and associated parts, and this hanging depression from the tacker, Your Honor, can be predefinitely set by the shoe itself, and by the tightness of this spring, to move the wiper and the tackers to the predetermined relation desired for the tacking and wiping. And, in the patent in suit, as we said this morning, we have the same roller, now numbered 226. Now, in this the bar number 224 and in this, the tacker 234 is moved by the spring. It is moved by that spring until 224 reaches the pin attached to the frame of the machine; then the tacker can go no further. Here, the McFeely is so arranged, as it is in this patent in suit, to advance the wiper still further; and to move relatively to each other, as you see. The same thing is done on the side moving tacker, which is also forced against the side of the wiper, until it is stopped from the motion of this part.

Now, the patent definitely says what those things are for. I am now reading from the patent in suit; I am on page 6, beginning at line 91,—“The base 232,”—which is the base of the tacker,—“is formed with an elongated slot 242 therein (Figs. 3 and 7)” —there's the slot, (indicating)—“and a pin 244 depending from a bracket arm 246 (Figs. 2 and 3) rigidly secured to the machine frame; co-operates with this slot to limit the cam actuated forward movement of the unit, 234,”—that's the tacker unit, the base of it is 232,—“bodily with the block 224, determinately to position the tacks beyond the inner edges of the wipers when the wipers are partially withdrawn rearwardly for the tack driving operation.”

Now, it states in here that the spring also cares for any obstruction; that's true. It will, if there is anything in front of the tacker, it will stop it, but the tacker can't advance beyond the limit set by the pin, 244, and that is not the end of the motion of the wipers. I am sorry to go over it again, but it is very important that we see it. This says that the wipers are partially with-

Testimony of Arthur M. Greene, Jr. (Resumed).

drawn rearwardly. This in on page 8, at line 21: "Accordingly, the base plates 286 have rods 296 extending therefrom in the direction of their length out and through smooth bores in the sides of the machine frame. The ends of these rods are threaded and receive stop nuts 298 which engage the frame and adjustably limit the inward movement of the bases 286 and their tack holding and driving units. By adjusting the stop nuts 298 which, as seen in Figs. 1 and 3, are located on the outer sides of the frame, the tacks in said units may be positioned less than the maximum distance inwardly of the wiper edges predetermined by the initial adjustment of the stop plates 294. It will also be evident that the stop nuts prevent the corner tackers from moving too far inwardly, where they might engage the hold-down, in the first two advancing movements of the wipers." That is, the wiper of the patent in suit goes in once the full amount of the relative motion between the back unit at the center, called the bight, and the two corners. There is very little translational variation between the two tackers, but there is a rotational movement. Now, the second movement is the same. On the third movement, there is only a partial turn to keep the tackers ahead of the wipers.

Now, in this other McFeely patent, 1,129,881, there are only two movements to wiping, but in those the parts co-operate together with the side of the band and tightness of the screw, to predetermine the position to which you want to wipe and tack. Coming next to the figure 2 of the McFeely patent, 1,129,881, defendant's exhibit D-1, and this corresponding sheet of the patent in suit, we see in each of these figures, defendant's exhibit D-1, of 1,129,881, McFeely, and defendant's exhibit G of McFeely 1,558,737, a hold-down, which is numbered 200, in the patent in suit, and 102 in the patent 1,129,881. These are each driven by a rack and pinion, finally meshed to another pinion over a thin cam, which is marked 110 in 1,129,881, and 174, in patent 1,558,737. Now, the purpose of the hold-down in each of these patents is to add one particular part to the cycle, to allow the last and upper to rise, between the first and second wipes, above that support at which the tacks are driven. The McFeely patent, 1,129,881, describes this exactly in the way in which it is described for the rise between the first and second wipes of the patent in suit. Of course, Your Honor, there is no third wipe in 1,129,881. You know I read the description of that action, which refers to this lifting between the wipes.

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: Is that in the original patent?

A. This is the original patent, 1,129,881. This is on page 6, beginning at line 15. "The block 102,"—that's the hold-down,—is guided for vertical movement in the machine head and has rack teeth engaged by a pinion 105, coupled by a rack rod 107 to a lever 108 which is fulcrumed at its upper end and is held by a spring, 109, acting on the rack rod, against a cam face 110 formed on the front end of the cam block 65. This cam face is formed with relation to the cam track 75,"—that cam track 75, Your Honor, is the one at the middle, that's the wiping cam track right in the middle of the cam 75,—"for the bottom rest to be raised between the first and the second advance of the wipers so that the shoe may come up to the level of the wipers before their second advance, whereby the upper is caused to be firmly wiped or ironed down upon the last bottom to form a firm, smoothly lasted heel seat. The lifting of the shoe is effected by the strong spring 45 located in the jack lifting mechanism which is put under tension when the jack is locked up."

That is, the wording is almost the same as in the patent in suit, and it does the same thing. You first have the hold-down moved to put the bottom last, that is, the last bottom below the line of the wipers for the break-down, and then, when you retract, you raise it about a thirty-second of an inch, as you see in Model A, and then wipe it over. That is, in this early patent of 1915, the same principle as in the McFeely patent in suit is disclosed,—there is no difference whatsoever.

Then we finally come to the tacking members, which I have described, as to their relative motion, and although the pin is somewhat different, the principle behind it is the same, that is, you move your wipers in, and that, by some relative motion, sets the small pin, 850, and you pull your wipers back to get out of the road of the tacks. In each of those figures, we have the brown tackers. In the McFeely 1,129,881, these are represented by 125 pushed down by a plate, 126 when the cam 132 is pulled out of the road.

Now, when we come to the patent in suit, we have the same kind of a plate at the top cut off the same way and they hang in the same way, the same kind of a cam on the shaft, which, when it is pulled over, has a sudden drop by which to bring this down by a small fraction of the rotation. In the patent, 1,129,881, there is no upwipe, and there is no preliminary point, but the other elements and particularly those which refer to all of the

Testimony of Arthur M. Greene, Jr. (Resumed).

claims in suit, if a narrow construction is taken of the claims of the patent in suit, then all of those claims are met by the prior McFeely patent. In fact, it might be that the element referring to the change of the hold-down might possibly come under the inclined shaft between member 100 at the bottom of the hold-down, and the member 102, that is, that solution would mean, that if you should move them, you would change the position at which it started to go down. It would be, however, the full movement of the cam, but it does render possible a change in the starting position.

MR. TOULMIN: Your Honor, I have got to a convenient afternoon point for adjournment.

THE COURT: All right; we will adjourn until 9:00 o'clock tomorrow morning and run until 12:00.

At this point, an adjournment was taken until 9:00 o'clock in the morning of the following day.

MORNING SESSION,

SATURDAY, JANUARY 21, 1939.

Court met pursuant to adjournment, counsel being present on behalf of both parties.

Thereupon,

Dr. Arthur M. Greene

resumed the stand and testified further, as follows:

By Mr. Toulmin:

Q81 Last night, Your Honor, we were on the comparison of the two McFeely patents, and we have a brief conclusion. Will you proceed, Dr. Greene, now to complete your comparison between the first McFeely patent and the second McFeely patent, on which you were engaged last night? A. In order to do this I would like to refer to a large—

MR. TOULMIN: Just a minute, Doctor. I will offer these in evidence, so we will have the record complete.

Thereupon counsel for defendant offered in evidence four enlarged colored photostats, and the same are made part of this record, marked as follows:

Defendant's Exhibit T-1; Figure 1, McFeely patent No. 1,129,881.

Defendant's Exhibit U-1, Figure 2, McFeely patent No. 1,129,881.

Testimony of Arthur M. Greene, Jr. (Resumed).

Defendant's Exhibit V-1, Figure 13, McFeely patent No. 1,129,881.

Defendant's Exhibit W-1, Figure 19, McFeely patent No. 1,129,881.

By Mr. Toulmin:

Q82 I have placed on the easel on the right-hand side, Dr. Greene, Defendant's Exhibit V-1, and on the left-hand side Plaintiff's Exhibit 16, which is an enlarged photostat of Figure 12, Figure 3 modified, and Figure 10 of the patent in suit. A. If it please the court, I would like to refer to the two exhibits Defendant's Exhibit V-1 and Plaintiff's Exhibit 16 to show the similarity and equivalence of the two devices, one of 1915 and applied for in 1909, the other of 1925 and filed in 1916, with particular reference to the co-operative movement of the tackers and wipers.

In both cases you have a cam roller 76 in 1,129,881 patent and 226 in the patent 1,558,737. These are attached to members which slide and are connected through parts to the wipers 70, 71 and 72 of the 1,129,881 patent, and the wipers for which the number is not given in this figure (indicating Exhibit 16) but the word "wipers" is added leading to those points. I would like to insert the number of that wiper for future reference of the court. The wipers are numbered 254 in Figure 5. These are mounted on a track in the form of an arc of a circle in the case of the patent 1,558,737. Now in the earlier McFeely patent 1,129,881 the moving member forces an equalizer and at the same time a member 83 for the wiper at the bight of the band. The side members connected to the equalizer through gears drive the wipers at the ends of the band, or at the outer ends of the band I had better call it. Between the outer end wipers and the central or bight wiper there is a connection 71 which is pivoted to each of these and as they move that band closes in to wipe the part of the last adjacent to the bight. In this one (indicating Exhibit 16) the end of the wipers is pulled in as it moves forward by the gear to which I have just referred.

MR. LYMAN: You said "in this one."

A. Referring to Exhibit 16, in the case of the second McFeely patent. Now in this first McFeely patent there is a cooperating member attached to the tackers which is shown, Your Honor, in the Exhibit E-1, if I might find it for you.

THE COURT: If you will give me the sheet number I can find it.

Testimony of Arthur M. Greene, Jr. (Resumed).

A. Well, it is Figure 8 of the patent. There is a nice large figure here which I should like to give you, with your permission (handing enlargement to the court), and I would like to compare that with Defendant's Exhibit S-1, which has been prepared from the patent drawings of patent 1,558,737. The part to which I refer Your Honor as the cooperating part of the early McFeely is the lip 122.

MR. LYMAN: I would like to see this, too.

A. You have a sample of it, but I would be very glad to let you have it.

MR. LYMAN: Are you referring to Exhibit S-1?

A. I am now referring to the Defendant's Exhibit E-1, with special reference to part 122, which is a suspended part rigidly connected to the tacker and forms a guide member which positions the tacker properly over the last to drive the tacks at a definite distance in from the edge,—this part cooperates with the last through the heel band—because that is not visible in Figure 12 of the patent, not in this reproduction (indicating), which is an exact reproduction.

Q83 Which exhibit are you referring to, Doctor?

A. I am pointing to 1,129,881, Exhibit E-1 of the defendant. And, as I said yesterday, the pin 850 working in the cam groove 842 of the patent 1,129,881, cooperating with the beveled base of the member 86 forced down by a spring which may be adjusted, and because of these guide members 122, the motion transmitted from the roller 76 through these cooperating parts on the tacker and wiper at the bight and the tacker and wiper at the open end of the band, produces a movement of tackers and wipers which can be predetermined, which is predetermined, in the words of Mr. McFeely and, as you see on this drawing, to make the tackers and wipers conform, as he says in the patent, to a right or a left or any peculiar form which he may have.

Coming to Exhibit 16 of the Plaintiff, which is for the patent in suit, and referring also to the Defendant's Exhibit S-1, which is an isometric drawing, we find on this drawing the member 226, the roller, attached to the slide, which is painted blue in this figure and represented by 224. Then you will notice, Your Honor, this member which we referred yesterday, 244, which the patent says is firmly secured to the bed of the machine. He does not say it is rigid with the machine but secured to it; and were it not for the fact that it was secured and not rigid or rigidly secured, you could not get the adjustment which you need in here for an extra

Testimony of Arthur M. Greene, Jr. (Resumed).

motion or a further motion of the tacker. Then also you find in here the spring to which we referred yesterday, and the stop pin which regulates the amount of motion, together with this 244, which the member 224 and the member 232 can have together without relative motion, but then if the motion of 224 is greater than that controlled by the stop, the slide and wiper go in further. I call your attention also to this limiting member 296 with the nose 298 on Exhibit 16. The spring 290 forces the wiper inward as far as this adjustment will permit. The wipers at the end of the band are controlled through the member 276 and its associated parts, and this may be varied but, as attention was drawn yesterday to the fact, as inward motion occurs there is rotation of the wiper relative to the band. These two parts, 244 and 298, have nothing to do with the power means of this device. They are absolutely separate and with or without them the power means which is causing the motion would act.

The drawing Defendant's Exhibit S-1 shows the tackers of the two patents, E-1 of the McFeely 1,129,881, and S-1 of the later McFeely, 1,558,737, and the distribution of parts are the equivalent in those two figures.

I would now like to refer to certain other drawings which again show this similarity. (Placing two other charts on easels): If the court please, I would like to refer to Defendant's Exhibit W-1, which is a reproduction, enlarged, of Figure 19 of the McFeely patent 1,129,881, and Plaintiff's Exhibit 17, which is an enlargement of Figure 4 of the patent with certain details added to explain the drawing in better form. In the Exhibit 17 we have the part 92, which is marked as "Manual Adjustment for Heel Band", coming through to the center, the shaft 86 coming through to the center, which is a pinion that moves the central part or adjusting member forward or backward. In the 1,129,881 patent, Defendant's Exhibit W-1, marked in red in the same way, is the projecting member which in this figure is made longer, and by reference to Figure 18 of this patent, the purpose of it is to permit the introduction of a shaft 690 moved by a similar device to this. It is not shown in this figure, of course (indicating Exhibit W-1). The part, however, is long and is similar to that shown in this previous figure, so that the adjustment of the back stop, as McFeely calls it, which is not connected to the band but backs it up, can be adjusted. And, as interpreted by the plaintiff, this is the same as the

Testimony of Arthur M. Greene, Jr. (Resumed).

motion there (indicating Exhibit 17), in that it controls the position of the back of the band relative to the side supports and pressers. It is not a support, however, and in this McFeely there is no need for such a support in that there was no upwiping. We have the yellow bell crank levers driven by the racks on the parts 59, and we have the equalizers 60 in the Exhibit W-1, corresponding to 134 in the Exhibit 17 of the plaintiff. There is a band in the McFeely, in the Exhibit W-1. There must be springs on these clamping members, inasmuch as the equalizing bar is driven directly from the sector arm connected with the back cam face of this McFeely patent 1,129,881. There is the hold-down shown in this figure of W-1—I beg your pardon, the support for the hold-down, 100, and that of the McFeely patent is attached to the hold-down. In this figure the part shown here—I am now referring to Exhibit 18—the part marked blue is the support for the toe and the blue part in the center is the upper end of the jack. In the patent in suit, as shown by Plaintiff's Exhibit 17, we have a yielding means at the top driving the equalizer as it is pulled up and yielding if the spring at 100 is compressed its full amount and forces against its cylinder within which it moves. As previously said a number of times, and as you have said, Your Honor, a yielding means must be somewhere in this device. And in the later McFeely, as shown in Exhibit 17 of the plaintiff, springs are used on the driving member between the source of power and the machine. There is a spring here, it is in evidence, which does yield, may yield, but if tightened up sufficiently and when it is compressed this is an unyielding member back to this point. I call attention to the great similarity between the early McFeely 1,129,881 and the later McFeely 1,558,737 regarding the motion and the parts used to force the heel band against the last.

Now I would like to call your attention, Your Honor, to the enlargement of the cooperating parts (placing other charts on easels), which are very nicely shown on the two figures presented to the court, Defendant's Exhibit U-1 of the McFeely patent 1,129,881, Figure 2, and the same numbered figure of the plaintiff in his Exhibit 15 of the McFeely patent 1,558,737. In each of these there is the cam wheel driven from the shaft and delivering power to this machine. In the McFeely patent 1,129,881 the only cams which concern us in the claims in suit are the back face cam 64, the central cam

Testimony of Arthur M. Greene, Jr. (Resumed).

—by the way, the 64 moves the band and also the jack —the central cam paths, 75 of the early McFeely and 228 of the later McFeely 1,558,737, which controls the wipers and tackers through cooperative means. There is no direct connection between tackers and wipers; there is cooperative means, there is relative movement, and each of them will be cooperating means. Then we have another face with the cam 110 which moves the hold-down through a pair of racks and pinions, the hold-down being 102. And in Exhibit 15, the second McFeely, we have a cam path in the center 174 which moves through two racks and pinions the hold-down, which is number 200 and marked "Hold Down" in this enlargement. The hold-back is shown in Figure 2 of the Exhibit 15 of McFeely 1,558,737. And referring just for a moment to Defendant's Exhibit T-1 of 1,129,881 patent, we see the same hold-back attached to the post of the machine. This hold-back in each case is operated from the gear on the lower part of the moving member which forces the band around the last. That member is 130, I take it, on this plaintiff's Exhibit 15, and it is 61 on the Defendant's Exhibit U-1. The two are identical.

We next come to the tacking members, which are shown in each case, and as shown by the Defendant's Exhibits E-1 and S-1, the great similarity and equivalence of that construction is shown. Each of them is driven by a cam on the same shaft, cam 318 of the Plaintiff's Exhibit 15, and cam 132 of the Defendant's Exhibit U-1.

Lastly, I would like to call attention to the general views as shown by Figures 1 of these patents, using the Plaintiff's Exhibit 13, an enlargement of Figure 1 of the McFeely patent 1,558,737, and the Defendant's Exhibit T-1, a photostat reproduction but colored of the early McFeely patent 1,129,881, and I call attention to the cam wheel at the center in each of these, the tacking arrangement with the same driving method, the tool post which, by means of bars 690, is raised by the cam which is alongside; and I spoke about that in the other figure. We have in this one the rod 43 which does the same lifting, and then, as I called attention of the court a moment ago, we have the hold-back, which is operated from this same cam. This is not shown in Figure 1 of the McFeely patent 1,558,737 because that part is within the housing, and the part which you see outside containing the lever 170 is a separate and

Testimony of Arthur M. Greene, Jr. (Resumed):

additional device on this patent, which has the function of initially pulling the lasting post back against—the post backward and the last against the band. There is nothing like that in the early McFeely patent, and the function of this member was to retract the heel of the last with its upper against the band so that upwiping could start as soon as that got into place. That is, as McFeely says in his description of the patent 1,558,737, the first thing is to initiate the backward movement by this extra cam track, then it begins to close by means of the back cam track, raise and push downward with the hold-down, in order to get upwiping.

Q84 Doctor Greene, have you examined the Model A machine of the plaintiff, known in this case as Exhibit 4, located in the anteroom? A. Yes, sir.

Q85 What do you find as to that machine, as to the inclusion in it of anything of this first McFeely patent 1,129,881? A. The embodiment is identical as to function and operation with the exception of the upwiping and the method of limiting the motion of the hold-down, which is common in the art, as I will show.

XQ86 Now, Dr. Greene, will you look at this chart and tell me what it is? Before handing it to you I will have it marked.

The chart referred to was marked **Defendant's Exhibit X-1** and is made part of this record.

A. The Exhibit X-1 is entitled "Cam Positions of McFeely, Patent No. 1,558,737." It is based upon the Figure 10 of the patent shown on Sheet 3 and on the patent specification starting at page 10 and going through to page 12. As Your Honor will recall, in the discussion of Exhibit 16 (placing chart before the court) of the plaintiff, Mr. McNulty called attention to Figure 10 and its motion as indicated by the roller, and stated that it would be difficult to see just how this fitted—correctly stated it would be difficult to see from this just how the different parts operated because of the distribution around the circle of the cam. All this drawing has been prepared for is to aid the court in seeing how these different parts advance. The cam tracks in all of the figures from 1 to 10 are substantially identical—they were intended to be—and the thing which was moved was the relative positions of the rollers, cam rollers, and crosses have been put on the rollers which are going into action and are described underneath the different figures. Down at the left corner the designations

Testimony of Arthur M. Greene, Jr. (Resumed).

of the various parts are given. The number 116, for instance, as seen on any one of these figures, will be the complete cam wheel; 118 is the cam surface for controlling the heel band clamping pressure and hack support and held-in pressure, and so on. And as we go through the description from page 10 to page 12, the various things which are stated there have been copied off to aid the court in seeing the cooperation of these various members.

Q87 Now, Dr. Greene, will you continue with the rest of the prior art, so you can conclude on that subject, for a moment? A. The next patent to which I wish to direct the court's attention is that to Cavanagh, No. 1,130,142, in Exhibit J-1 of the defendant. In this exhibit, which is an enlargement of Figure 1 of the patent, we find a clamping means, colored orange, forced against the shoe last and upper by the members, in purple, the cross bar being marked 60, moved through the foot treadle 70 at the bottom of the picture through a chain. This enables the operator to clamp the last and upper, which is mounted on the pin 90 and forced inward by the treadle 80 which is operated by heel and toe of the foot; and then the handle 48 is pulled out to throw the clutch 46 into such a position that the crank face 42 rotates. This rotation of this crank causes the connecting rod 40 to move. It then moves the rod 20, which moves the cross rod 22 and forces the wiper inwardly as many times as the operator desires. The patent specifies that by moving the pin, which is called the crank pin, on the crank disk 42 nearer to or farther from the center, you position these wipers in a predetermined relation to the last. That is, if you are dealing with a last requiring a small amount of wipe, the crank pin is moved nearer the center; if you want a larger amount of wipe, you predeterminately arrange it by moving it farther from the center.

In Figure 2 of the patent in your set there, Your Honor, which is not given in the exhibits but in the collection of patents, in Figure 2 you will note the operation of the heel band. It is held down by the pressure exerted on the member 62 which is attached by the chain to the foot treadle. From there on, however, you have the unyielding parts 60, 75, down to the member 55, which presses in at the side. You also have an adjustable means at 54 to permit the support to be moved outward if desired. And in Figures 3 and 4 of that same sheet you note that the pressure is above the lower edge of the last. In this we have wipers with predetermined

Testimony of Arthur M. Greene, Jr. (Resumed).

adjustment as described, means to move the wipers, we have the U-shaped figure and the jack, we have a movable adjustable member, we have the heel band supported on opposite sides and pressure members on those sides, we have means to operate the pressure members and the end wipers.

Q88 Is this a power operated machine or hand operated machine, Dr. Greene? A. The wiping is power operated.

Q89 Is it an automatic machine in the sense of wipers in a complete power cycle, or do you have to have a hand intervention? A. You have to have a hand intervention; as shown in the figure, which shows the clutch moved by the handle.

Q90 And after you have once started do you go through a cycle of operations? A. Until stopped.

Q91 Yes, until stopped. A. I would like to call attention again to this enlarged figure which shows at 16 the handle with a screw 15, which is used to adjust this for inclination, as we saw in the shoe factory visited. The lasters there had adjustments for practically every position that you might encounter in a shoe last, up and down, crosswise, forward and aft, and this member 16 is the handle for properly inclining the wipers in the cross direction.

The next patent to which I would like to refer is that to Brothers, No. 1,135,945, as shown in the Defendant's Exhibit L-1, which has been prepared to show more clearly the cooperation of the wipers, which are driven in this case by an operating lever through an equalizing bar, but then at the corners of the wiper are predetermined adjusting means for the wipers 83. By opening or closing the gap between those two projecting ears the initial position of the wipers may be changed—can be changed. There is a hold-down shown in this but the important feature to which we wish to call the attention of the court is the adjustable wiper.

The next patent is that to Brock, No. 1,188,616, who is the assignor to the United Shoe Machinery Company of Paterson, New Jersey, a corporation of New Jersey, and the Exhibit M-1 of the defendant is an enlarged view of Figures 9 and 10 of this patent. The band, which is of an orange color, is shown, and is made of a particularly resilient material, according to the patent. It is supported by clips at the ends of the band, and there is a support at the bight of the band which is adjustable in two directions. By the hand wheel 94

Testimony of Arthur M. Greene, Jr. (Resumed).

it can be adjusted perpendicular to the normal axis of the last, and through the member 96 it can be advanced. At the back of the band, and shown in this figure at the bottom, is another clip. It is not very clear in this picture, but in Figure 9, to one side, there is shown the depression made at the bight of the band to receive the end of that clip. And we will see by reference in just one moment to the other figures just how this is supported. There is a chain band 86, colored red, which is fixedly connected at the ends to the purple members which, we will see in a moment, are unyielding until you get to the spring member which is in the system between the cam and the band. If the court will kindly look at Sheet 2 of this patent, and particularly Figures 3, 4, 5 and 6, it will be noted that by means of the screw 62 the ends of the wipers may be forced inward and preliminarily adjusted to give predetermined relation between the motion of that wiper and the last which is to be used for lasting. That is, here we have an adjustable wiper. In Figure 4 we note the side supports for the clamp band. On turning to Figure 1, Sheet 1, we can see this adjustable arrangement at 62, near the bottom of the picture, and a similar mechanism at the top for preliminarily adjusting the wipers; we see the clamping means, which is colored purple; and in Figure 2 is to be noted the purple member which operates this clamping means and is driven by a bell crank lever at the bottom through the spring 10, which of course is required. As I said earlier in my testimony, the cooperative parts of the clamping member are not clearly indicated in this figure, and I referred to the patent to Brock, No. 1,002,818, in which we have the structure which I have described. There is no definition in the patent specification saying that this is the structure, Your Honor, but from the drawing and the parts in this figure, the springs, the adjusting screws at the ends, dotted lines, and particularly Figure 2, I am led to believe that this patent 1,188,616 has bands which are driven by chains forced inward by the device shown in 1,002,818, which is also assigned to the United Shoe Machinery Company. In this we have wipers, predetermined adjustment of them, means to move them, we have the U-shaped band, the jack, the movable adjustment at the heel, the heel-band support at the sides and at the back, the pressure members to operate the sides, manual means to adjust, means to operate the pressure members, and the wipers.

Testimony of Arthur M. Greene, Jr. (Resumed).

We next come to the patent to Merrick, as shown by the defendant's Exhibits N-1, P-1 and O-1. The intention, Your Honor, in Figures O-1 and N-1, the purpose of putting O-1 and N-1 in originally in preparing for this case, is that these illustrate very nicely and completely the method of upwiping by the use of the band.

MR. LYMAN: The exhibits are N-1—

A. —N-1, O-1 and P-1. Directing our attention to P-1, which is an isometric drawing prepared to more clearly bring out the operation of this device, we have the wipers 27, which are moved by the arms, bell crank arms 29, as the wiper is moved relative to the upstanding roller 38. The spring permits the wiper plate and wipers to move forward relative to this roller and so close in over the last. At the lower part of the picture we find the heel-band supported above the bottom with pressure members at the side operated by a plate and from a plate which moves inward. Now, Your Honor, if you will turn to Figure 2 of the patent, on Sheet 2—and these sheets are numbered from the back forward—you will note down in the lower right-hand part a little bit up from the bottom, members 40, 41, which are attached to the base 35. This base 35 carries the clamping band and the wiping members. On account of this parallel motion, as it is called, as you advance those members 40, 41 by means of the handle 47-a you cause upwiping from the bands and also an inward motion of the wipers. Now the figure right above there, Figure 2-B, shows a method of varying the length between the point 47-g and 47-e, which means that when this adjustment is made the wipers travel forward a greater amount, and so by this adjustable screw 47-e you can pull a toggle joint amount of motion, which is produced by this handle 47-a, so that you vary in a predetermined way the amount of motion which you are going to give to your wipers relative to the last. You will note in this same figure a member 103, which is on a post 104, which is called in the patent the hold-down. If you now turn to Figure 1 on the left-hand side, you will find this member 103 mounted on 104, but 104 is moved by the toggle joint 110, 112, so that if 111 pivot is moved to the right or left, the hold-down will respond in motion. If in this position it moves to the left the hold-down will be lowered. This hold-down is driven by means of the element 116, which moves backward and forward, and only moves when the clutch 120 is thrown in. Attached to that member, however, is the bar 129, on which are two stops 132, at each end. By moving

Testimony of Arthur M. Greene, Jr. (Resumed).

these stops you can control the amount of downward movement of the hold-down.

And while speaking of that feature of the Merriek patent I would appreciate it if the court would turn to the Plant patent, an earlier one.

THE COURT: 958,280.

A. That is the one, Sir. And referring to Figure 1 of Sheet 1 of that patent, the specification refers to the bar 172 in the center at the top as an operating member for the hold-down which runs off from 28 over to the side. This bar 172 is moved by the rod directly below it through the toe pedal 29, which has an engaging edge which fits into any one of the notches 203, so that by moving this toe pedal to one of the other notches you can vary the amount of motion of the hold-down.

The next patent is to Pym.

MR. TOULMIN: May it please the court, I desire to direct your attention to this quite important patent from our point of view, that the Pym patent was formerly one in suit here and dropped, alleged by this plaintiff to be a patent that we infringed and which we had taken by a part of the machine. I shall call Your Honor's attention later in the case, by argument, to certain rules of law in this connection.

THE COURT: This is the third patent.

MR. TOULMIN: The third patent.

A. The Pym patent, to which reference will be made in a number of the figures, is shown in an isometric form in Defendant's Exhibit Q-1, which is intended primarily to bring out the wiper action, the heel band action, and means of varying the positions of the wiper. In this Exhibit Q-1, prepared from the construction disclosed in the patent, there is a wiper carrier with a central prolonged bar which has on each side of it the wiper adjusting means similar to the means shown in the early Eaton patent, that is, the rack bar shown in the wiper adjusting means 125, 126, 129, 130 can be moved by the parts 133, 134 mentioned in this picture, or labeled in this picture "Predetermined Adjusting Means for Wipers." That is, by moving the rack bar and turning the gears shown in the picture, the pinions, it is easily seen that the teeth on the back of the cam carrier, the wiper carrier, can be moved so as to close or open the outer ends, because this unit is carried on a circular cam or projecting key. Now as the whole thing is forced forwardly in this position, in this picture it is seen that the rack, now being stationary, causes these gears to move as the whole frame is moved forwardly, and that

Testimony of Arthur M. Greene, Jr. (Resumed).

motion will produce an inward motion of the wipers 120 as marked in this picture. The front of the picture shows the rack which is attached to this predetermined adjusting means. The picture also shows the hold-down 72 which, as we will see in a moment, has an adjustment for varying its initial position. Then we have the orange-colored heel band with the spring controlled pressers, which are mounted on the support 79, and the figures later will show how this is moved.

Going now to the patent, Your Honor, and looking at the last one of the figures, Mr. Pym—

THE COURT: Sheet 9?

A. Figures 14, 15, 16 and 17, I am merely calling attention to the fact that Mr. Pym here has shown his various cams in quite a similar way to that shown by the defendant, so that in his description at the end of the patent he shows how the various elements of this structure, which is a bed laster, will move.

Referring now to Figure 9 of the patent on Sheet 7, you will note there the red member 79 which is mounted on the pin, loosely mounted, since it turns, on the pin 81, which supports the bight of the band. This set of arms is driven backward and forward through cam action by the purple member 101. I do not think, Your Honor, it is necessary to go into the cams.

THE COURT: No.

A. The cams move it, as you will see. As this is moved forward the pressure is put on not only at the sides but at the bight of the band, as shown in Figure 11. That shows the part adjacent to the bight, and when the member 101 is retracted the spring 100 causes the backward movement. The picture also shows the hold-down 74. Then if we turn to Figure 6 on Sheet 5, we have the patent drawing of the parts which have been indicated in an isometric method on the Defendant's Exhibit Q-1, and since I have discussed the motion of the wiper plates and their predetermined adjustment I will not need to discuss that further here. The picture also shows, however, the hold-down, colored blue, which is mounted on a cross bar and travels on the column 64, 64 at the front of the machine.

Turning now to Figure 5 we note the support 42 of the last backed up by springs of various strengths, and then at the top we have the hold-down, which is moved through the movement of 68 at the top. On Figure 3 just preceding that we see this part 72 which is backed up by the threaded bushing 75. By moving this bushing up or down you are enabled to position the hold-

Testimony of Arthur M. Greene, Jr. (Resumed).

down a varying amount to suit the action of the laster when he wishes to operate the machine. Now, Your Honor, the motion of the bar 64 is controlled by a cam and this action of starting the motion at which the hold-down comes in contact with the shoe may be altered by the position of this member, although the element of claim 42 speaks of varying the motion, and this merely varies the position. The amount of motion has been clearly shown to be limited in the Merrick patent and in the Plant patent.

On Figures 12 and 13 of Sheet 8 I merely wish to show the court by these figures the method of varying the inclination of the last or of the position of the last relative the center line. You will note the screw 35, which is attached to a slide block 34, is used to position the last as desired by the laster. These figures, however, very nicely show the pin 81 which is the support for the part of the band at the bight and about which the members 79 are freely mounted, or loosely mounted, as one expression has been made.

Q92. Now, Dr. Greene, will you compare the McFeely patent in suit, No. 1,558,737, with the Hoyt patent in suit, briefly, please? A. The Hoyt patent in suit, No. 1,508,394, with reference to claims 19 and 21, deals with the heel band and its associated parts, being shown by R-1 of the Hoyt patent, and the McFeely patent—Figure 4, in the patents in the book, Your Honor.

MR. LYMAN: Which are you referring to now?

THE COURT: Defendant's Exhibit R-1.

A. In the Hoyt patent as shown in the Defendant's Exhibit R-1, a reproduction of Figure 2 of the patent. I am comparing this with Figure 4 of the McFeely patent in suit, 1,558,737. In each of these patents we find an arm, 120 in the McFeely patent and 200 in the Hoyt patent, which are driven from the cam face and deliver power and motion to the pinions 124 in McFeely and 198 in Pym. This pinion is attached to a shaft in each case, or these pinions are attached to shafts in each case and drive pinions which move members within which are springs. The spring 195 is within this slider bar 194 of the Hoyt patent and the spring which appears to be marked 128 in Figure 4 of the McFeely patent is within the slider 130. Each of these springs is connected to a bar which finally supports an equalizer, 188 of Hoyt, 134 of McFeely. Then the motion is carried through two side bars containing racks, which operate bell crank levers. At the bottom of the bell crank lever is a connection in each case running to

Testimony of Arthur M. Greene, Jr. (Resumed).

members pivoted on the housing of the machine. These pivots are 172 in Hoyt and 80 in McFeely. The ends of the levers, 160, 158 in Hoyt and 78, 78 in McFeely, are attached by a series of parts to the pressure members which act against the edge of the band. In the McFeely patent there is a connection between this turning lever 78 and the end of the bell crank lever and rod containing a spring with limited motion, whereas in the Hoyt patent there is an adjustable member which in any one position of the outside tubing is a fixed length. In the Hoyt patent there are two members, 240, 242, which according to the patent are loosely mounted on the support, adjustable support of this patent. These members in the Hoyt patent extend to face members 246 and are pressed against them by springs contained within the cylinders 232, 232, meeting the description of the claim calling for "loosely mounted members on the support." In the McFeely patent attached to the support at the end of the bight by the projection 64 we have a spring which produces pressure on the pads 70, 70, adjacent to the bight. This spring can move under pressure. It is not rigid; it exerts pressure inward. Its function is to produce at points adjacent to the bight pressure to force the band or hold the band, force the band inward against that portion of the last. In each case, as seen in Figure 6 of the McFeely patent 1,558,737, we notice on the adjustable supporting member a part 72, against which the band may be forced by bending when the spring member 68 extends under pressure. In the Hoyt patent we also note in Figure 6, Your Honor, the member marked 236 but should be marked 234, which is at the same point near the middle of the band. In the Hoyt patent, as shown in the Defendant's Exhibit R-1, it is seen that as the springs within the part 232 yield, the band must be forced backward toward the member 234 and the lower part thereof.

At this point a short recess was taken, after which Dr. Greene resumed the stand and testified further, as follows:

By Mr. Toulmin:

Q93 Now, Dr. Greene, in order to summarize your position on the prior art with respect to the claims of the McFeely patent in suit, will you please take up each claim that is now in issue in the patent in suit of McFeely and apply to each claim those particular examples of the prior art, say two or three, that you think are

Testimony of Arthur M. Greene, Jr. (Resumed).

particularly pertinent in order to have some summary of our entire position. A. I have taken Claim 6 and have definitely marked the elements of this claim which appear in the McFeely patent 1,129,881, and I will mention those and also refer to the elements as found in certain other patents.

Q94 All right. A. The first element of the claim refers to end lasting wiper plates for closing over a last bottom. These are the parts in McFeely as shown on Defendant's Exhibit V-1, as 70, 71 and 72. The same elements, Your Honor, are shown in practically all of the patents in which lasting is indicated, such as the very early Copeland, Lombard, the Snow patent—both of the Snow patents which I have described, the Plant patent, the Brock patent 1,188,616; and I do not wish to burden the record with all of the different parts of those but I have described them quite fully.

The next element is "manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last." These, as I have told the court today, are the parts in the early McFeely 1,129,881, as shown on Defendant's Exhibit V-1, the parts 83, 84, 842, 840, and the hanging member attached to the tackers, 122.

MR. LYMAN: The parts are what?

A. 83, 84, 86, 87 with the spring inside, 88, the pin 840, the cam 842, the roller 97, the smaller numbered parts on the side members, and the hanging parts definitely attached to the tackers, marked 122, as shown on the other figure.

In the earlier patents we find these manually operable means determinately to adjust the position of the wiper plates to initially position the wipers to act on the marginal portions at the end of a shoe upper mounted on the last very nicely in the Eaton patent, with the exact equivalent of the Moenus construction if the plaintiff can plead that rigid connection is this—that is in the next one, the rigid connection. The manual adjustment is shown in the early Copeland patent by the statement in the specification that he can inwardly adjust, and also to one skilled in the art it is evident that the arm C-1 could be moved. In the patents which I have described this morning we also have the adjustable means, as shown very nicely in Pym, which is Eaton. That is a most excellent reference for a bed laster. And then in the Merrick patent by adjusting the length of the arms we have this; in the Brock patent 1,188,616;

Testimony of Arthur M. Greene, Jr. (Resumed).

the Brothers patent 1,135,945; and I could read others, Your Honor, but again I would like to refer primarily to Eaton and to Pym, because they are similar to the method used by the defendant.

The next element of the claim which I have marked in this McFeely patent is "means to effect bodily and swinging movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened on the bottom of the last." I would like to say that all that I have mentioned before apply, and in this McFeely patent the parts from the cam 75 which drives 76.

Q95 Which McFeely are you referring to? A. I am now referring to Defendant's Exhibit V-1, cam 75 which drives the roller 76, all the way down to the parts 70, 71 and 72. I think that is means to effect bodily and swinging movement of the wiper plates. And the other patents to which I have referred have these same elements for tacker units operating with the wiper plates. These are the tacker units numbered 103, all three of them, and the associated parts which I have described in this structure, the associated parts being the cams and beveled faces which bring about this co-operative movement. We find that in other of the patents describing tackers the tackers have been definitely united to the so-called wipers; called wipers in the specification; and if we look at those, in my opinion the word "cooperating" could not be used, because in this patent, as shown in Defendant's Exhibit V-1 of the early McFeely patent, and in the same thing on the later McFeely patent, you do have relative motion between wipers and tackers at some part of the stroke, which means cooperation, and the examiner—I don't know how this was worded originally, Your Honor, but the examiner properly used the word there "cooperative." They can't move with the thing because, as you see, the end wiper of the late McFeely patent—

MR. LYMAN: I think that is purely argumentative, Your Honor.

A. (Continuing): —1,558,737, although there was practically no movement, in translation the two did rotate relative to each other and you couldn't possibly have a rigid connection between them as the defendant uses and as the early patent to Copeland teaches.

MR. LYMAN: That is purely argumentative which the witness has been giving now.

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: I think so. Of course, Dr. Greene is an expert and I think while it is argumentative, still he may give his ideas on that subject.

A. Your Honor, in the other patents to which I have referred, in which tackers were shown, the tacker and the so-called wiper moved together and were attached so that no relative motion could occur.

The next element of that claim, which is "having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates" we have in the early McFeely patent 1,129,881, as shown by the exhibit of the defendant, these members to which I referred earlier in answer to this last question, the cooperating parts which, by previous adjustment of the spring and in placing the hold-down in there as McFeely in this patent says, will predetermine the relation which the tacker and wiper is to assume in the cycle of the machine. In the other patents which I have mentioned in which tackers are shown, there is a definite relation between the two, that is, there is no movement; the tacker and the wiper move together, and here is a hole through which the tack must go, which must be changed.

Shall I take up the next claim?

Q96. Just proceed from claim to claim, Dr. Greene.

THE COURT: Isn't it better to couple the claims that pertain to the same subject?

A. I won't mention those again, Your Honor. I will just take the claim and put in the new elements, if I may, so as not to burden the record.

MR. TOULMIN: Just a minute, Dr. Greene. I think that is a good suggestion the court makes. We have the claims here in pairs, as arranged by the other side. You might take claim 85 next.

A. In claim 85 the same elements are recited, Your Honor, except the element "additional power means for subsequently operating the wipers". Now the McFeely patent in suit (placing a chart before the court) 1,558,737, in regard to this element of the claim, I would say that in looking at Figure 3 to which I called the court's attention this morning on this very point, we have the element 296, which is a limiting bolt. This is shown on Plaintiff's Exhibit 16, and is put in there to predetermine the relation of wiper and tacker on the corner. Then we have this stop 144, which is attached to the frame, secured to the frame, rather, which limits the motion inward. Now, these positioning means are absolutely independent of the power mechanism. The

Testimony of Arthur M. Greene, Jr. (Resumed).

power mechanism passes through the slider 224 and through the bell crank levers, and so forth, but the power mechanism, after this acts to stop the motion, has nothing to do with it, and even before it has nothing to do with it. I again feel, not knowing the prosecution in the Patent Office, that the "additional power means" had to be put in there, that is, the part before in this claim, "means for effecting preliminary adjustment of the wipers to the contour of the shoe,"—that is these two parts here and also this other part—does some adjustment. Then it says "additional power means." Now I do not think that that meant just power means. I think the words "power means" would be one thing, but this is "additional power means," and I feel that that element is in this late McFeely patent 1,558,737, and now let us see if it is in this earlier one, 1,129,881. To my mind, Your Honor, that is not in the early McFeely patent except in the sense of interpretation of the plaintiff, and if that interpretation is taken, then these power means are power means and that power means is power means (indicating). That is, we are faced with the meaning of that word. If "additional power means" means "power means" only, then the McFeely has it completely. So that this claim 85, in my opinion, and its elements, would be met by this early McFeely patent, and I have called attention to the parts which would meet that. Now, in claim 23—

Q97 —Are there any other patents in connection with claim 85 that you wish to call the court's attention to, or are you through? A. I beg your pardon. I have already called the attention of the court to the other patents which care for all the elements except this additional one in claim 85, and I would say that in those machines there are not additional power means. I think I have covered that then, Mr. Toulmin.

Q98 Do you mean, Doctor, that it is not an additional power means unless it is construed as the plaintiff has construed the matter? A. Yes, sir, that is right.

Q99 Now go to claim 23. A. I have placed my comparison of claim 23 on Figure 19 in order to bring out the elements of the claim. This claim calls for a substantially U-shaped clamping member, which is part 52, which is colored green in this figure, which was colored in this form to correspond with the color used by the plaintiff. I am now using Exhibit W-1. On our patents, Your Honor, this member, should you look at the patents, would be colored orange, but in order to bring out the similarity it was thought advisable to

Testimony of Arthur M. Greene, Jr. (Resumed).

use the colors that matched on the two figures. So that we have that U-shaped clamping member, and I would say, to save time, that this U-shaped clamping member is shown in all of the patents mentioned dealing with this element. Then "means to support a last and shoe upper", which of course is the jack underneath the hold-down 100 of Defendant's Exhibit W-1. In the plaintiff's Exhibit 17 the jack is actually shown, because the hold-down is not in that part. I would also say that in all of the patents cited there is a jack to support the last; otherwise it wouldn't work.

The next one is "a movable adjusting member connected to the lower edge of said clamping member at its rear closed end." In the patent in suit that means the so-called clip of the figure. And in the early McFeely patent 1,129,881, as shown by Defendant's Exhibit W-1, we have this back stop, which is not the same as the support. It has the function which was claimed by the plaintiff of moving the last forward, and in the sense in which the plaintiff met that in his testimony, Mr. McNulty, if such an interpretation is at all possible when in this you have no upwiping and when in this patent you have upwiping and also in the exhibit or model A you have upwiping. Your Honor may recall the part which limits the motion of the hold-down on that model was screwed all the way up and then a jam nut was put on to prevent somebody—I don't know who; maybe us—moving the thing. That is, you have got very little upwiping possible in that thing because it was set that way. The patent drawing doesn't show that jam nut. The jam nut shouldn't be there; it should be so you can arrange it to vary the amount of upwiping, and in this early McFeely 1,129,881 there is no upwiping; therefore, there is no need of a support. In the later McFeely there is upwiping and the support is necessary.

Q100 Let me ask you right there, if you assume, as the plaintiff has, that that back support is just the same in connection with the heel band, whether there is an attachment between the two or not, then as I understand it, the first McFeely patent completely meets this element. A. Absolutely; absolutely.

Q101 Pass to the next element. A. The next element is "means to support the lower edges of said clamping member at opposite sides." These are the grooves in 51 and the band 58. In the early McFeely patent 1,129,881 they must be there; otherwise the thing would drop down. And in the later McFeely, as shown

Testimony of Arthur M. Greene, Jr. (Resumed).

on Defendant's Exhibit 17, there is, as shown by another view, a clip going up beneath the band. In each case, however, there is a support at the opposite sides of the band.

The next element is "pressure members" — Before leaving that, Your Honor, I would like to say that practically all, if not all of the patents which I have discussed yesterday and today have this element and also the element 8. In certain of the patents, such as 1,188,616 of Brock, there is a support at the rear portion. You have seen that and I have called attention of the court to it.

Now, the next element: "pressure members arranged to engage the opposite sides of the U-shaped clamping member at points above its lower edges and to press said sides inwardly to force the end of the upper in close conformity to the last." These are the parts, 51, as shown on the defendant's Exhibit W-1, of the early McFeely patent, and of course are the parts marked "pressure members" in the Plaintiff's Exhibit 17. Now, if we look at the Brock patent in particular, in fact, if we look at all of the patents which I have discussed, there is no one that does not have pressure members to squeeze the opposite side of the clamping means against the last.

The next element is "manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members." The pressure members are the side members which force inward, 51, 51, in 1,129,881 of Defendant's Exhibit W-1, and the so-called "Pressure Member" of Plaintiff's Exhibit 17. In the patent in suit this element refers to the moving of the support, as it is called, by the handle 92 through the gear wheel in the McFeely patent 1,129,881. On the Defendant's Exhibit W-1 we have a movable back stop 612,693, which is not a support but it is a stop that moves this band relative to the pressure members, because if you shorten that up one inch these members have got to be drawn back over the pressure members, so that the stop does that. And if the interpretation put upon this element by Mr. McNulty is true, then it is met also by this as well as by defendant. And even in the members such as the method of support used by Brock in 1,188,616, where there is a chain, that may be moved forward, and the new conformation of that part must move the other parts into a new relation.

The next element in the claim is "means to operate said pressure members to clamp the shoe upper," and

Testimony of Arthur M. Greene, Jr. (Resumed).

that is the mechanism of the cam track, which is the rear cam track in each of these patents, through a similar kind of an arm and finally acting through the bell crank levers to clamp the side. That is, the means to operate the said pressure members in the early McFeely patent will be the equalizers, the pin, the pinion not shown in the picture, the bell crank lever connected with the back cam face, the equalizer, the side members, and their cooperating parts. That is, in the early McFeely we have in the same way as in the later McFeely "means to operate said pressure members to clamp the shoe upper," and that is the clamp 64, the cam and pinion 61, the equalizer 134, and the head connecting the springs 57, 695.

Then the next element is "end wiping mechanism to wipe down the edges of the upper over the bottom of the last." And that I have described in each of these as the wipers.

Q102 What are you referring to now, Dr. Greene?
A: The wipers which in the early McFeely, 1,129,881, Defendant's Exhibit V-1, are the parts which drive the wipers 70, 71, 72, and extend backward from them to the roller 76 and the cam 75. And in the later McFeely patent 1,558,737, Plaintiff's Exhibit 16, we have the same arrangement extending from the wipers, which were 254, back until finally we reach the cam roller 226 of this Exhibit 16 of the plaintiff, and its cam track 225 in the cam wheel. In the earlier patents, other patents which I have mentioned this end wiping mechanism may be a handle—in so many of them it is because they are bed lasters—and it may be a crank and connecting rod, as I showed the court this morning.

Q103 Dr. Greene, do you find in any other of the patents than the first McFeely patent, in a single patent, the combination of a heel band attached to a back support which can actuate it, a means of adjusting the heel band to compress it on either end, and wipers? Do you find that combination in any of these other patents?
A: May I ask if you stated the back support was adjustable?

Q104 Yes, an adjustable back support. A: I should say a number of patents would meet that. Brock, 1,188,616, combined with its corresponding patent 1,002,818, and Cavanagh, 1,130,142 I believe would meet it; Plant would meet it 958,280.

Q105 That is enough, Doctor. That is sufficient for my purpose. Now will you proceed to the companion claim, 91, and point out the particular prior art patents

Testimony of Arthur M. Greene, Jr. (Resumed).

that apply to that claim? I think in view of the fact you have already explained this, if you just call off the numbers of the patents it will be sufficient. Give His Honor the reference to this. Do you understand, Doctor? I just want the numbers of the patents that apply to claim 91. A. Of course, the McFeely patent, as described, 1,129,881, has the elements.

Q106 What are the patents now besides that first McFeely? A. I will give them to you in just a moment. The Lombard, 524,445; the Brock patent, 610,935; the Cavanagh, 1,130,142; the Brock patent, 1,188,616; and the Pym patent, 1,368,968.

Q107 Now, Dr. Greene, will you turn to claim 42 and call the court's attention to the prior art as applicable to that claim in anticipation of it? A. The claim 42 contains a functional statement which reads as follows: "mechanism in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers." Now this functional element, in my opinion, in connection with the disclosure of the McFeely patent 1,558,737, definitely means upwiping, which has been dismissed from this case. If this be interpreted to mean upwiping, I have only the patents of Plant and of Merriek, mentioned earlier in the morning, as performing this action. If this part of the claim is interpreted in a manner as described by Mr. McNulty, then of course this particular element is met by the early McFeely patent 1,129,881, in the description of the action of the hold-down and band cooperating together, and with such an interpretation there are a number of patents which will meet this claim very clearly. One of them of course is the McFeely patent, because the only new element which has been brought in here is the action of the hold-down and jack to move the last, to depress it a slight distance after the first wipe, between the first and second wipes. The elements then are found in Pym, 1,368,968, with the exception of the adjustment of the hold-down, which is the screw on the rod 222. This element, however, is old in the art. As I pointed out this morning, the claim has so many elements in it that it is difficult to find one patent which covers all, under the interpretation given by the plaintiff, but in McFeely 1,129,881 all of these points are made in that interpretation, and also Pym 1,368,969, with the exception of the old element relative to the adjustment of the hold-down.

Q108 You have completed the claims in McFeely? A. Yes, sir.

Testimony of Arthur M. Greene, Jr. (Resumed).

Q109 Will you turn to the Hoyt patent and pick out several of the prior art patents as to claims 19 and 21 that you want to call the court's attention to? A. I would like to call the attention of the court to claim 19, and in connection with it refer to the patent to Snow, which I described yesterday. It is the second Snow patent, 946,708, and particularly Figure 3 of that patent, Figure 3 of Snow, 946,708. And in the claim 19 we have "a substantially U-shaped flexible band operable to clamp the heel end of the shoe", which is common to all of the patents which have been referred to and to this one also. We come now to "an operating member and unyielding connections between said member and the band for forcing the ends of the band against the shoe." In this particular patent the operating member, as seen on Figure 2, is the cam 26, 25, which cooperate with a spring to move 24. Then in the Figure 3 it will be noted that 24 is connected to the cross bar, which is solid, the side links 18, which are solid, and the ends of the member 12, which are also solid. If in the interpretation given by the plaintiff the yielding means cannot be included in this claim, which of course would make an inoperative device, then in this, from the spring on, the interpretation would be met for this element of the claim. Then we have a final element: "separate yielding means operating on each side of the band adjacent to the bight of the band to press such portions of the band against the shoe." And by looking at this patent we find the wedge 35 loosely mounted to move on the cross bar and the cross bar held by 24, which is attached to a spring. Then this wedge presses also against the movable members, which can be freely moved to adjust themselves, which press on points of the band adjacent to the bight. In my opinion this one patent anticipates the claim if the claim is to be an operable one. That is, it does have the spring, which must be in there.

If we now go to claim 21 and read the elements of that in connection with the Pym patent we find, Your Honor, on Figure 9, Sheet 7, a substantially U-shaped band, which is the part marked 78; means of supporting the band, which is the frame 79, resting upon guideways and supporting the pivots 85 and the bolts 97 which carry the bent pin 78 which is also attached by screws. The next element is "devices comprising arms loosely mounted on the supporting means." These are the arms 79, which are pivoted on the part 81 which corresponds with the supporting means of this patent. Your Honor

Testimony of Arthur M. Greene, Jr. (Resumed).

will recall that in reading the patent I called attention to the fact that the claim speaks of the arms of the patent, 242,240, as being loosely mounted on the supporting means, so that this 81 is the exact equivalent and will be seen also in the Figure 4 of the patent. Then the next element in this claim are "means normally operative to press said devices against the band." And these are the springs which are mounted in the side—not the end members but the side members of this frame 79, and are shown in Figure 11.

Q110 Now, Dr. Greene, will you take up the question of the infringement by the defendant Williams' machine of the claims in the McFeely patent, and will you point out your views on that, to make the issue between us?

A. The claim 6, Your Honor, calls for the elements "and tacking units cooperating with the wiper plates and having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates." That element is not in the defendant's structure, as the tacking units do not cooperate in the sense of McFeely. McFeely has a structure, and to describe what he has invented he uses the word here, and properly uses it, of "cooperation" between the tacking units and the wiper plates. They are not connected together; they cooperate. And I do not find the tacking units cooperating with the wiper plates to maintain them in this predetermined cooperative position for all adjustments of the plates. In claim 21 we have "a movable adjusting member connected to the closed or rear end of said clamping member" which is called for as an element of claim 21.

Q111 Just a minute, Doctor. I think you have the wrong claim. It is claim 23. A. Yes. This is the old claim that has been cut out. In claim 23; "a movable adjusting member connected to the lower edge of said clamping member at its rear closed end." That is the clip which is missing in the defendant's structure. Then we also have "manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members." In the defendant's construction, Your Honor, there is no connection between the support at the bight of the band and the band to cause this motion called for in this element of the claim between the band and the side members. A back stop will prevent the band from going back beyond its limit when the band is forced backward by the last mounted on the jack as it is pushed in. That is, if you

Testimony of Arthur M. Greene, Jr. (Resumed).

notice in the defendant's structure outside the band when open usually—in fact, every time I have seen it it has always been away from the back stop, and it took the motion of the post to be forced in in order to bring that about, and so the movement is caused by the last, and the amount of motion which is going to take place is fixed by a back stop. There is no question about that. But the motion is not produced by that but it is limited by that. So I do not find that element which is in claim 23.

Coming now to claim 42, I do not believe that the defendant has the element "mechanism effective in timed relation to the clamping means to depress the hold down and support to position the shoe bottom determinately below the plane of the wipers." That is a complete description of the action of the hold down to produce up-wiping.

Then going further to another element, "the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down", is not present, as power is the thing which is used to operate this mechanism, which is not present in this element of the claim. Then we come to "the said power operated mechanism", referring to the mechanism above, "being operative substantially coincidently correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers." In the construction of the defendant, as in the early McFeely patent and shown on the Defendant's Exhibit T-1, the early upward movement of the jack as the hold-down is raised from the configuration of the cams is produced by a spring similar to this 3. So that we do not have an element called for, power operated mechanism, to do this. That is, the first thing is the spring and then there is a follow-up motion with that. And, lastly, the final element, "manually adjustable means for determinately varying the amount of vertical movement of the hold-down"—not the position but the amount of vertical movement of the hold-down. There are no manual means of doing that on the defendant's structure as he has had this machine from Germany. As set up and as used, there was no manually adjustable means for determinately varying the amount of vertical movement of the hold-down.

MR. TOULMIN: That has to do with that side strap, Your Honor, that we had some discussion about. A.

Testimony of Arthur M. Greene, Jr. (Resumed).

Then we come to claim 85, and in that claim, as I pointed out to Your Honor this morning, the means for preliminary adjustment of the wipers, particularly two parts of that, 244 and 298, were absolutely independent of any power means and therefore additional power means were needed. Now if you will look at the Pym patent, which describes the structure used by the plaintiff very nicely, as it is a modification of Eaton—

Q112. Do you mean plaintiff? Did you mean plaintiff when you were describing it? A. I should say the defendant's structure. If you look at Figure 6 of that patent, Your Honor, you will note that the means for driving—or the means for driving this—

THE COURT: —Figure 6?

A. Figure 6 of Sheet 5 of the Pym patent 1,368,968.

THE COURT: I have it.

A. I am reading this in connection with the element of the claim 85 which refers to the preliminary adjustment of the wipers, and as explained this morning to Your Honor, that means is the bar 130 which arranges the only power means which this has to do wiping and is not separate. That is, the whole interior structure is not changed by this, only the starting point of the elements; so that because of that I feel that the defendant does not have additional power means for subsequently operating the wipers. Then we come to the—

Q113 —Just a minute, Doctor. Will you point out on these photographs that the defendant took of our machine the means, so His Honor will have something to look at? Just pick out one or two that deal with this particular thing that you want to point out. A. Your Honor, I call attention to the Plaintiff's Exhibit 25-II, in which the complete means for applying power to the wipers from the slider or from the means connected to the cam through levers is shown, in which the operating device is complete, is not changed, and merely do we alter the position of these parts, the rack shown on the Plaintiff's Exhibit 25-I. That is, this rack is moved by the big hand wheel outside and simply rearranges the power means to force the wipers inward in their proper relation. That is, in this case you have no part of the power means which can be separated and needs to be separated and require additional power means.

Q114 Proceed with the next claim, Doctor, which I think is 91. A. Claim 91 calls for an element, near the beginning, supporting means relatively to which the opposite side portions of the band are permitted to

Testimony of Arthur M. Greene, Jr. (Resumed).

slide lengthwise of the shoe." If that refers to the supporting means used by Mc'eely, namely, the back supporting means, of course that is not present in the defendant's structure. If that refers to the side supporting means, it would be in the structure. But we come next to the important one, "means connected to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means," and that of course is absent from the structure:

Q115 Will you now take up the Hoyt patent, just the two claims, and point out your views as to the non-infringement of those claims? A. In the Hoyt patent I would like to use in connection with the claim 19—I would like to point out in the claim 19 that the element of "unyielding connections between said member and the band for forcing the ends of the band against the shoe" is not present, as a spring must be between the operating members. Then in the claim 23—

Q116. —Claim 21. A. Claim 21, we have the second element "means for supporting the band." As pointed out to Your Honor, the supporting means refers to the back member of the Hoyt patent 142 which is the equivalent of the clip. In the patent specification which I read to the court on my earlier testimony this particular part is spoken of as the supporting part. That is not in the structure of the defendant. Then "devices comprising arms loosely mounted on the supporting means" is not in the structure of the defendant exhibited in the court. Those elements are missing from claim 21.

MR. TOULMIN: That is all with the witness. You may have him.

THE COURT: We are five minutes from adjournment time and there is very little we can accomplish in that time, so I think we will adjourn until 10:00 o'clock Monday morning. Monday afternoon, as I say, we have our usual heavy bankruptcy and motion docket, so we will run until 12:30 on Monday and then adjourn this case until Tuesday morning.

Thereupon an adjournment was taken in accordance with the order of the court.

MORNING SESSION,

MONDAY, JANUARY 23, 1939.

Court met pursuant to adjournment, counsel being present on behalf of both parties.

Thereupon,

Arthur M. Greene, Jr.,

resumed the stand and testified further, as follows:

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 Professor, you say that you have examined the defendant's machine in operation? A. Yes, sir.

XQ2 Where was that? A. At Portsmouth, Ohio, on two occasions.

XQ3 When were those two occasions? A. Well, one was December 4, 1937, and the last time was January 12th of this year.

XQ4 Did you see all four machines operating? A. I did not.

XQ5 Which machine did you see operating? A. I saw the three machines of which I have the numbers, which I took at that time. Each of these was preceded by Number 1224, Your Honor, giving the type, and the machines which I saw were 87002, 86680 and 86679.

XQ6 The fourth machine that you did not see was the one at the Minster plant, I suppose. A. That is right.

XQ7 The machine that is in the hall here is one of the machines which you saw? A. Yes. It is the latest machine bought. The Minster machine, which is Number 3, is 86681, and then comes 86680 and 86679. Those I believe, from the testimony given, were the first ordered; and then 87002, which is the one in the hall, is the last one ordered.

XQ8 Did you see all of those machines operating, those three machines? A. Oh, yes, and examined the operation to make sure that, as far as I could see, they were operating in an identical manner.

XQ9 At the time you saw those machines operating was that wing screw that we have heard about used on the machines? A. No, at neither of the times.

XQ10 Neither of the times? A. No, sir.

XQ11 Was the heel band provided with a clip which had been sawed off? A. I believe it was. I am not

Testimony of Arthur M. Greene, Jr. (Resumed).

sure about the first time; Mr. Lyman, but I think they were sawed before I went there.

XQ12 Have you ever seen any of defendant's machines operating with a heel band in which the clip was not sawed off and in which the screw was used? A. I cannot say that. I believe I have not. All of the machines had the clips sawed off. But may I answer this?

XQ13 Yes. A. The time at which I cannot say the clip was sawed off it was free from the end of the back stop; and that I observed very carefully.

XQ14 At the time when you saw these machines in December, 1937, was that spring which has been called the "bight spring" removed from the pressure members in defendant's machines? A. I don't think it was the first time.

XQ15 It was the second time, was it? A. Yes, sir.

XQ16 Did you examine all of the machines to see whether that spring had been removed from them? A. I did not. I observed the operation and I believe they were removed.

XQ17 Somebody told you they were removed? A. And the operation indicated that.

XQ18 How did that operation indicate whether or not that spring had been removed? A. Only that you could see no motion as the band clip closed in during the clamping operation.

MR. LYMAN: Your Honor understands what I mean?

THE COURT: Oh, yes. That is at the rear of the heel.

By Mr. Lyman:

XQ19 Was this bight spring removed upon your advice from the defendant's machines? A. No.

XQ20 It was not? A. No.

XQ21 Were you consulted about the removal of that bight spring before it was removed? A. No.

XQ22 You simply found that, when you saw the machine the second time, that bight spring had been removed? A. I was informed of the fact that it had been, and I noticed that its action was such that it had been.

XQ23 On any of these machines as you saw them at any time was there an adjustable stop for varying the extent of vertical motion of the hold-down? A. There was not, sir, not a manually adjustable one.

XQ24 No manually adjustable one? A. That is, by changing the machine; that is, you could change the

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wipers or any part by taking bolts off and putting new members in. You could alter it that way, but there was no manual adjustment.

XQ25 That is, you could remove this fixed stop—
A. —You could remove parts by wrenches and taking springs off and reconstructing the machine.

XQ26 You mean now definitely that you could accomplish that purpose by taking off that spring and the fixed stop back of it, which are on the side of the machine, substituting another fixed stop of different length and putting that particular spring back? A. Yes. That could be done just the same—

XQ27 —Just answer my question, please. A. —As in the case of the wipers, by taking the others off and putting new ones on.

MR. LYMAN: Your Honor, we have had mounted up on these placards those photographs which were taken of the defendant's machine, as we said we would do. We have had them grouped together on four different cards, so that the court can see from each card the general views of the machine grouped together. There you will see a left-hand side elevation, a right-hand side elevation, a front elevation, and here is a front elevation getting a little nearer (exhibiting cards to the court), and this collection entitled "Wiper-Tacker Mechanism" shows there a front elevation, a bottom view that had to be taken from underneath; the photographer had to put his camera in underneath, there and take the floodlight and take it looking upwards. I am sorry. That particular picture shows it taken out. That statement is not true as to this photograph. That picture was taken with it out of the machine. Here is a top view of the tackers (indicating), and here is the front elevation of the tackers, showing the wipers. Here we have a collection (indicating another card), showing the heel band adjusting mechanism, a right side elevation, a view from beneath. That is the photograph that had to be taken by the photographer getting underneath the machine and pointing his camera up and turning on his floodlight. And here is another view from beneath, which is much the same as that except it shows the parts in a different relationship than that in which they have been viewed. And here is the detail view, bottom plan view. Then we have the fourth of these collections (indicating another card), entitled "Heel Band Pressure Mechanism." Here is the view from beneath, the same one we have seen before, but it is now correlated with others pertaining to this particular situation, the view from be-

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neath that particular member, the bottom-top view of this assembly, a bottom plan view of this assembly, and a top plan view of this assembly and laying them loosely in their relationships. We need to have something of this kind so the court can see the defendant's mechanism. I have been surprised, by the way, that with all this multitude of pictures that we have seen of this machine produced by the defendant we have not seen any pictures of this machine, any drawings whatsoever. This is our substitute for them. We have put legends on these devices, too, and if there is any criticism of the legends I shall let the Doctor tell me what it is.

MR. TOULMIN: In the first place, it is the obligation of plaintiff to prove defendant's structure that it claims is infringement. That is its obligation. We have produced, and I want the record to again show it, the machine not only voluntarily before litigation but have brought it here and had a mechanic take it apart. These photographs are very nice but I want to be sure that we are not misled by the legends, which are self-serving. And I want the record to show, before we go further, to what we object of these legends. I will take each sheet and call out what I object to and counsel on the other side can correct it, if he wishes, before he proceeds further. On the sheet entitled, "Heel Band Pressure Mechanism"—

THE COURT: —I wonder if it wouldn't be better to have those identified at this time.

MR. LYMAN: Yes. I will offer these in evidence.

THE COURT: Have them marked; then you can refer to them by exhibit number.

The four sheets containing collections of photographs, so offered in evidence by counsel for plaintiff, are made part of this record, marked as follows:

Plaintiff's Exhibit No. 29, Sheet of photographs entitled "General Views of Machine."

Plaintiff's Exhibit No. 30, Sheet of photographs entitled "Wiper-Tacker Mechanism."

Plaintiff's Exhibit No. 31, Sheet of photographs entitled "Heel Band Adjusting Mechanism."

Plaintiff's Exhibit No. 32, Sheet of photographs entitled "Heel Band Pressure Mechanism."

MR. TOULMIN: Let the record show that we object to certain of the legends on these exhibits. On Exhibit 31 the term "Supporting Clips" should be the "Side

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Supporting Clips", so there will be no confusion as to the issue here on the back supporting clip.

MR. LYMAN: We will be very glad to put that on.

MR. TOULMIN: Just let me finish my statement, please. On the view from beneath, on Plaintiff's Exhibit 31, there is the statement: "Shaft of Manual Adjustment of Heel Band," which we object to as being incorrect, as the heel band is not adjustable with the shaft, due to the severing of any physical connection between the back of the heel band and this member.

We object on the same sheet to the legend "Cam-Driven Operating Member for Closing Heel Band." This is not the operating member but the member which is directly engaged with the cam is the operating member, according to the specification of the patent in suit, and is the term properly employed.

We also call attention to an error in the lead line of this same view with reference to rack slide, as it extends to an end backing member rather than to the rack.

We object to the upper left-hand photograph on Exhibit 31, as to its legend, entitled "Manual Adjustment for Heel Band." This is not an adjustment for the heel band in this machine.

In Exhibit 32 we object to the use of the term "Supporting Clip" in the several views where it should be "Side Supporting Clip", so there will be no confusion there.

We also object to the legend on the upper left-hand photograph entitled "Cam-Driven Operating Member for Closing the Heel Band", for the same reason stated as to the same legend on one of the other sheets.

THE COURT: Decision will be reserved upon those objections, because I assume that you will work them all out.

MR. LYMAN: We will ask the witness, Your Honor.

By Mr. Lyman:

XQ28 You have examined the legends on these drawings, Professor? A. I have.

XQ29 (Placing Exhibit 31 on easel before court and witness): With reference to these legends to which Mr. Toulmin has called attention, referring to Plaintiff's Exhibit 31, the parts marked "Supporting Clips" in the photograph B are the side supporting clips, are they?

A. They are, sir.

MR. LYMAN: So we will consider that legend amended.

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THE COURT: Yes.

MR. LYMAN: (Marking exhibit): We will have that done with a pen later, Your Honor.

THE COURT: Yes.

By Mr. Lyman:

XQ30 The same supplement might be made on photograph D of this exhibit? A. That is correct, sir.

XQ31 It was said that there was an error in the lead-line leading to the rack slide in photograph D of Exhibit 31. The rack slide referred to is the one that is shown in photograph B on this figure, is it not? A. That is correct, sir.

XQ32 And the lead-line points to that element? A. Not quite, sir. It is a little bit above it.

XQ33 It points to this part of that element, doesn't it (indicating)? A. That is not the rack slide. The rack slide is that part shown in B.

XQ34 But it is one integral element, isn't it? A. Yes, sir.

MR. LYMAN: Your Honor, that is plain enough, I think. (Exhibiting photograph to the court): There is the legend leading to that element there, in which you see the rack slide again underneath. If you are going to speak about the rack—

THE COURT: —Of course, the rack can't be seen.

MR. LYMAN: And it is this element which is there called the rack slide.

THE COURT: I don't know. It can be qualified that it is intended for that.

MR. LYMAN: I think that is plain.

MR. TOULMIN: May I call your attention, Mr. Lyman, to the fact that the so-called rack slide of Photograph B can be seen in this photograph D just a short distance below, and that is the only reason we objected to it.

By Mr. Lyman:

XQ35 Doctor, will you add in pen, make the end of that lead-line continue until it does meet the actual rack slide? A. (Marking exhibit): I have done so on Photograph B of Plaintiff's Exhibit 31.

XQ36 Criticism is made of this legend in Photograph D of Exhibit 31. The legend says: "Shaft of Manual Adjustment of Heel Band." Isn't that the shaft of the manual adjustment of the heel band? A. No, sir. The heel band is not connected to that, and it merely is the

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manual adjustment for what McFeely in his earlier patent—

XQ37 —No, please don't go into— A. —calls the "back stop", and therefore we call it the "back stop".

XQ38 All right. Now, if the clip were on, about which there has been so much talk in this case, and the heel band attached to that back stop as it was before it was removed, then that would properly be called "Shaft of Manual Adjustment of Heel Band", would it not?

A. The patent in suit calls for—

XQ39 —Can't you answer that question "Yes" or "No"?

THE COURT: I think the question here is, what was the purpose of that shaft originally.

XQ40 Yes. A. Originally in the machine in which the wing nut did not drop it would move the heel band.

XQ41 What was the purpose of it? A. And the purpose originally probably was that the designer built it that way, the nut fell off and it didn't work, and it was then sawed off. In the machine which is in court that is not the attachment for the heel band. It is for the adjustment of the backstop of the early McFeely patent.

XQ42 Let us assume that this refers to the machine as it was in its original condition, before the wing screw dropped off. A. I never saw the machine in that condition.

XQ43 All right. Let us assume it was in that condition; then this is a correct description of that action?

A. Assuming it was in that condition, it is a correct description of that action.

XQ44 Then the same criticism and the same comment is applied to the same element marked on Photograph C of Exhibit 31 "Shaft of Manual Adjustment of Heel Band"? A. That is correct, sir.

XQ45 And the hand-operated member which is indicated in Photograph A of this exhibit with the legend "Manual Adjustment for Heel Band", that is the manually-operated member which turns this shaft, and so the same comment would apply to that legend? A. On the assumptions made by you, yes.

XQ46 Then it is said with reference to the legends on Photographs C and D of Exhibit 31 that the legend "Cam-Driven Operating Member for Closing Heel Band" is not correct. Do you agree with that statement?

A. That is not driven by the cam directly. There is a spring, in fact two springs, shown by the two rivet heads there, which are interposed between that member

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and the cam, and unless you call every member operated by the cam, including links, levers, gears, as cam-operated members, you cannot call that the cam-driven operating member. In the sense that it has movement resulting from the movement of the cam you would call it a cam-operated member, but it is not *the* cam-operated member, because there are other parts between that and the cam.

XQ47 Your point is it is not directly driven by the cam, that there is a spring interposed between the cam and that member? A. There is a spring, and must be a spring, to furnish the yielding means necessary in that structure.

XQ48 I will ask you to sketch that construction showing a sketch, Professor, indicating the connection between this member marked in the photographs "Cam-driven Operating Member for Closing Heel Band" and the cam. A. I will take the patent and copy from it, the patent drawing, Your Honor.

XQ49 This is defendant's machine. I am asking for a sketch of those connections in defendant's machine. A. As I recall the machine there is a bar such as this (making drawing) in side view with two springs coming back, and then we have, as I recall it, the edge members. In this machine, Your Honor, there is not—

XQ50 —Perhaps you had better just draw your picture first, Professor, and then comment upon it. A. (After completing drawing): If it please the court—

XQ51 May I see the sketch? A. Yes.

XQ52 (After examining sketch it was handed back to the witness). A. As I understand it, Your Honor, there is a cam, we will call it a face cam, on the rear end of the cam wheel, against which a roller rests and turns. The roller is on the arm of the bell crank lever, which I would like to—

THE COURT: —I wonder if we couldn't shorten this. This is all because of the legend on the side that there is an objection. A. I don't know what the purpose is.

MR. LYMAN: Yes, Your Honor.

A. I don't know what the purpose of the question is, Your Honor.

THE COURT: Well, the movement of that part gets its power from the cam, doesn't it?

A. Yes, sir, just as every other part of the whole system, clear to the edge—

THE COURT: —This says "Cam-driven operating"—

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MR. LYMAN: —“Cam-driven operating member for closing heel band”.

THE COURT: It does get its power through the cam. A. Absolutely, sir, through a spring; that is correct.

MR. TOULMIN: The reason for it is, Your Honor, the word “operating member” has a particular significance in that claim, in the construction of it. That is the reason we want to be perfectly clear about it.

THE COURT: What would you think—

MR. TOULMIN: —I think the fair thing would be not to call that an “operating member”, which it is not. An “operating member”, according to the patent we are here to consider, is a lever working like my elbow, and here is a cam which operates it. This is away down in the train of mechanism.

THE COURT: I think we are drawing that too fine. We go beyond that. You may have an exception. I think the legend fairly describes the part there.

MR. LYMAN: We will come to that question a little later, Your Honor, as to whether it is properly called an “operating member”.

THE COURT: You may have an exception. I think that is getting a little over-technical.

Counsel for plaintiff thereupon offered in evidence the sketch produced by the witness, and the same is made part of this record as **Plaintiff's Exhibit No. 33.**

By Mr. Lyman:

XQ53 Will you indicate on that sketch you have made, Professor, by the letter “A”, the part which is designated on these photographs as the “cam-driven operating member for closing heel band”? A. I mark on the drawing, which shows few of the operating members to drive the heel band, the letter “A” on this particular part of that system, which in photograph D is labeled “Cam-driven Operating Member”. That is the part which I have marked “A”.

XQ54 There may be some confusion here, because I see you have already gotten an “A” and a “B” here. Perhaps you had better change that. A. I will change the original letter “A”, which referred to one of the two pinions on a shaft, to the letter “C”, so that “A” may stand as it is marked.

XQ55 Now, I would like to be sure that I understand your position regarding infringement of the claims in

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suit. And, Professor, may I say I don't wish you to argue the question again. We have heard your arguments. I want to be sure I understand just what your position is.

MR. TOULMIN: I object, Your Honor, to saying that to the witness. I don't think it is fair, the caution.

THE COURT: Yes, I think the objection is well taken. Of course, it is always a question for the court, and if there was any objection at the time to the testimony, the objection should have been stated. But I do think the objection to the caution is well taken.

XQ56 All right, strike out the caution from the question. Just why do you say that claim 6 of the McFeely patent is not embodied in the defendant's machine? A. I say that the elements of claim 6 of the McFeely patent 1,558,737 which are not found in the defendant's machine are the last two elements which I read: "and tacking units cooperating with the wiper plates and having means to maintain them in a predetermined relation to the wiper plates in all positions of adjustment of said plates."

XQ57 And you say that in the defendant's machine because the tackers and wipers are fixedly related they do not cooperate, is that correct? A. I say that in view of the claim 6 and the early Copeland patent.

XQ58 Let me ask you this way: As a matter of fact, in the defendant's machine the tackers and the wipers do cooperate, don't they? A. Well, it all depends upon what "cooperate" means. Words have different meanings. By the dictionary of this patent "cooperation" does not mean direct connection. That is, Mr. McFeely has described what "cooperation" means, and then has asked for a claim on that, in my opinion.

XQ59 Just answer the question. As a matter of fact, the wipers and the tackers in defendant's machine do cooperate to get the result, don't they? A. As a matter of fact they do not cooperate in the sense of this patent.

XQ60 I will ask you to forget your definition. We understand you are giving the word "cooperate" a special sense, then, as a result of something the patent discloses? A. Yes.

XQ61 You are saying the word "cooperating" must be used in a limited, narrow sense, because of something this patent contains. A. In view of Copeland I see nothing else that can be possible.

XQ62 In view of a Copeland prior art patent? A. Yes, sir, and the wording of this patent.

XQ63 And the wording of this patent. Then you say that the word "cooperating" as used in this claim

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must be used in a narrow, special or restricted sense; is that right? A. In the sense of this patent, yes, sir.

XQ64 Forgetting all of that, there can be no question that when you have a machine that is intended to do what this machine does and what the defendant's machine does, the tackers and the wipers cooperate in that result. A. I can't forget things.

XQ65 I think that doesn't need any argument. The wipers come in and wipe down the lasting allowance and hold it there while the tackers drive the tacks to accomplish the result of this machine, don't they? A. They drive tacks when they get into final position for driving tacks.

XQ66 Now in that respect, in the respect that in the defendant's machine the wipers and the tackers are combined together, as it were solidly, so that they move together, in that respect the defendant's machine is like the Model D machine, the commercial Model D machine of the plaintiff, isn't it? A. Yes, sir.

XQ67 Then we have your position, I think, as to the reason why you say Claim 6 is not infringed by defendant's machine, and I would like to turn to claim 85, which is the next, which is the other of the wiper-tacker claims and, if I remember what you have said, you denied that that claim was infringed by the defendant's machine for the reason that in defendant's machine there is no, what you call "additional power means". A. That is right, sir.

XQ68 Well, let us now look at the photographs of the defendant's machine and see just how that mechanism operates. I am referring to Plaintiff's Exhibit 30, entitled "Wiper-Tacker Mechanism". Now correct me if I am wrong here. Referring to the Photograph A, the operator, in order to adjust the position of the wipers, the initial position of the wipers, turns this hand wheel, which is marked "Manual Adjustment", away. Is that right so far? A. Yes, sir.

XQ69 That turns a shaft upon which it is mounted, which has a spiral gear marked A-1 and another spiral gear marked A-2 in that photograph. A. That is correct.

XQ70 Turning now to the next view, Photograph B, as this wheel, this manually operable wheel is turned, spiral gear A-2 meshes with a spiral gear marked in Photograph B B-2, and spiral gear A-1 meshes with spiral gear B-1, seen in the photograph B; is that right? A. I think it is right. The two spiral gears on the cross

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shaft gear with the two spiral gears which are on a longitudinal shaft, and I think your statement is right; but whether it is B-1 and A-1 I am not sure. But the two spiral gears on the cross shaft gear with two spiral gears on shafts which are directed axially.

XQ71 Now, the movement of this spiral gear B-2 seen in Photograph C turns a threaded shaft upon which a part marked "Rack" is mounted and the movement, therefore, of the spiral gear B-2 causes that rack to travel along the shaft. A. That is correct, sir.

XQ72 The movement of that rack rotates the element marked "pinion" in Photograph C of this Exhibit 30; is that correct? A. That is correct.

XQ73 Thus the motion of the hand wheel shown in Photograph A we have now traced to a motion of the pinion shown in Photograph C. Now the pinion in Photograph C is fixed on one end of a shaft which carries on its opposite end the part marked "Segment Gear" in Photograph B. A. Correct, sir.

XQ74 So that as the operator moves the hand wheel of Photograph A he also moves the part marked "Segment gear" in Photograph B. Right? A. That is correct, sir.

XQ75 And, similarly, he moves the segment gear at the left; he moves both segment gears. A. That is correct.

XQ76 Of Photograph B, by this same movement? A. That is correct.

XQ77 Now, as he moves these segment gears, take, for instance, the one to the right, as that turns, if it turns in a clockwise direction then that will operate to close the wipers' position in, manually, to adjust the position of the wipers inward toward the yoke; is that right? A. Correct, sir.

XQ78 And, contrarywise, if turned in the opposite direction it turns them outward? A. That is correct.

XQ79 And the same thing happens at the left? A. Yes, sir.

XQ80 So there we have a manual adjustment of the initial movement of the wipers before any power action takes place. A. Yes, sir.

XQ81 In this machine here—see again if I am right—the cam is connected to the part marked in Photograph B "Yoke Attached to Wiper Power Slide". Is that right? A. Yes.

XQ82 And the movement then of the cam at the proper time moves this whole head shown in Figure B bodily

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backward and forward in the machine? A. It moves the part backward and forward together with the rack pinions and all parts which have been moved and adjusted by the hand wheel.

XQ83 During that power movement this rack which is seen in Photograph C is fixed in position, isn't it?

A. That is correct, just as in the McFeely patent and the Eaton patent.

XQ84 Professor, we are just trying to find out how this machine operates for the time being; so that when you now, by the movement of the power slide connected to this yoke, move that head bodily forward, the pinion which is seen in Photograph C moving over a fixed rack is going to turn. That is right? A. That is right.

XQ85 And that will also turn the segment gears which are shown in Photograph B? A. That is right, sir.

XQ86 And the result of that is that the bodily forward motion of this whole head is accompanied by an inward movement of the wipers and tackers? A. That is correct.

MR. LYMAN: I hope that is plain, Your Honor.

THE COURT: That is the only way it can go, under the circumstances.

By Mr. Lyman:

XQ87 Let me get your position clear. You say there is mechanism in this defendant's machine for a preliminary adjustment of the position of the wipers with reference to the heel of the shoe. A. Within the power system.

XQ88 There is such a means? A. Yes, within the power system.

XQ89 That is the manual adjustment of the wipers and the train of parts— A. —In the power system.

XQ90 Just a minute—

MR. TOULMIN: Just let him answer your question, please.

A. As I called attention to the patents in suit, the parts 294, 294, do not take part in the power system and are needed to adjust the motion.

XQ91 All I am trying to get at is your position on this point here. There is a manual adjustment of this machine to determine the initial position of the wipers and the tackers, isn't there? A. Oh, undoubtedly.

XQ92 Then after that initial adjustment is made then there is a power throw of a predetermined extent

Testimony of Arthur M. Greene, Jr. (Resumed).

that is determined wholly by the cam. A. Through the whole system.

XQ93 Is the answer "Yes"? A. Yes, through the whole system.

XQ94 That is the way the machine acts. Now, the point you are making, if I understand it, is that the segment gears which appear in Photograph B of Exhibit 30 constitute a part of the train of mechanism which does the preliminary adjustment and also a part of plaintiff's power mechanism which accomplishes the power movement? A. Just as in Pym.

XQ95 That is your position? A. Yes, just as in Pym.

XQ96 It is a fact that the power movement of this machine requires additional means beyond the means that are present in the machine for the preliminary adjustment. Correct? A. Not separate from the power means.

XQ97 They have to be additional to— A. —No, sir.

XQ98 —The power means. I understand there is additional power means that is present in this machine for the operation of the tacker and wiper mechanism, in addition to anything that is used in the manual adjustment, isn't there? A. Well, the rack which does the adjusting is the power means and is necessary for moving it.

XQ99 Answer "Yes" or "No" to my question. A. No.

XQ100 There is not? A. There is not.

XQ101 What about this yoke that attaches the head to the power slide and the cam? Is that used in the preliminary adjustment? A. Oh, yes.

XQ102 In the preliminary adjustment the yoke that attaches to the wiper power still is used? A. Oh, absolutely.

XQ103 How? A. Because if you did not do that, the moving of this part might push the whole thing along. You have to hold it there so as to move the rack.

XQ104 In the preliminary adjustment? A. In the preliminary adjustment.

XQ105 In the preliminary adjustment? A. Yes, sure. If there was too much friction, that turning might move the whole head. You can easily see, Your Honor, that the turning of this handle which moves this wheel, if there were a lot of friction—and there isn't much—I am just saying why this part in here is absolutely neces-

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sary. If you turn these parts this gear would move the whole head along, and by moving this you would have to move that gear; it would be locked together. And this is absolutely necessary to hold it in position while you are doing your preliminary adjustment.

XQ106 In other words, the position you now take is that the manual adjustment for the wipers involves all the whole train of mechanism, power and everything else, the power being used simply to hold it still while you move the adjusting means? A. No. The parts which participate in the power means are the parts which participate in this preliminary adjustment completely, and not like 244 and 298 of the patent.

XQ107 And you say that the yoke which connects this head through the cam and the cam constitute part of the mechanism for preliminarily adjusting the wipers simply because they stand there and prevent this head from moving while you are adjusting them? A. They surely do.

XQ108 That is your position for noninfringement of this patent? A. Yes, sir.

XQ109 And so you say that while the machine has means for effecting a preliminary adjustment of the wipers to the contour of the shoe it has not additional power means for subsequently operating the wipers. That is your argument? A. In the sense of this—

XQ110 —That is your argument?

THE COURT: Answer the question "Yes" or "No" and then explain.

A. (After XQ109 was read): It has no additional power means.

XQ111 Well, just to make it plain on the record, during the preliminary adjustment of the wipers this head, which is marked "Movable Head" in Photograph B of Exhibit 30, and the yoke which it carries and by which it is attached to a wiper power slide, and the wiper power slide that drives it, and the cam that drives the wiper power slide, all are stationary. A. That is correct.

XQ112 They take no part in the movement of the wiper adjustment except by their mere presence? A. Oh, no; by holding the piece in this position (indicating).

XQ113 Before I proceed further I would like to continue with this matter of the legends on these drawings. There was no criticism as to Exhibit 30. As to Exhibit 31 I think we have dealt with all the points. As to Exhibit 32, these clips which are marked "Supporting Clips" in Photograph B are side supporting clips, are they, Professor? A. That is right, sir.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ114 We will have them so identified. A. (Marking exhibit): And the same on Photograph A, just on one side.

XQ115 The same on D also? A. Yes, on D also.

MR. LYMAN: We will have those legends changed. I think we have taken care of all of those points, Your Honor.

By Mr. Lyman:

XQ116 I would like to make sure that I understand your reasons for your position as to noninfringement of claim 23. Will you turn to claim 23? Claims 23 and 91, Your Honor knows, relate to the heel band adjustment.

THE COURT: Yes.

XQ117 As I understood your testimony, you said that claim 23 is not embodied in defendant's machine for the reason that there is no connection between the heel band and the back-stop, the clip having been sawed off and the screw thrown away. A. That is correct, sir.

XQ118 That is your reason for noninfringement of that claim? A. Yes, sir.

XQ119 It does not apply to the structure before that mutilation was accomplished? A. I don't like to call it "mutilation", but before it was dropped off and was removed. I would rather answer the question that way. I would like to say, not to argue, Mr. Lyman I don't want to say that to quibble over words.

XQ120 You may call it an improvement, if you don't like to use the word "mutilation". With reference to claim 91 the same situation applies? A. Yes, sir.

XQ121 The reason why you say claim 91 is not embodied in defendant's machine is again the fact that that clip has been sawn off? A. That is at least one of my reasons.

XQ122 Do you have any other reason for claim 91? A. Yes, sir, and also in 23.

XQ123 What was the other reason? A. The other reason in 23 was "manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members." That was another reason, even with it being cut off it now no longer moves it. The thing which moves the side band, as I explained in my testimony, was the movement of the jack as it came back into the machine.

XQ124 I understood what you said. A. But that is another element.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ125 You say the fact that the clip has been cut off does away with that element of claim 23? A. Both of those elements.

XQ126 Now as to 91. A. In my direct testimony I stated that the element "supporting means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe", if that referred to the supporting means as given by the clips it was not there. If, however, it refers to what you call the side supporting clip, then it would be in there. Then the other element which is not present is "means connected to the end portion of the band for adjusting it lengthwise"—that is, the clip.

XQ127 It is your position— A. —Yes, sir. And the other part depends upon how "supporting means" is interpreted.

XQ128 Your position, again, is the same with reference to claim 91 as 23? A. Correct.

XQ129 Because by taking away that clip, cutting off that clip and throwing away that wing screw defendant has avoided further infringement of the claim which would exist except for that? A. (After XQ129 was read): I would say that this element would be present were the wing screw in position and operated.

XQ130 With reference to claim 42 of the McFeely patent you say that the defendant does not infringe that claim because there is no upwipe in the defendant's machines. A. No, I don't say that is the only reason. In the first place, the words "mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers", in my opinion refers to upwiping. And then when we—

XQ131 —So that is the first reason why you say defendant does not infringe? A. That is the first reason. And then when we come to the next part, "the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidentally correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers", that refers to a power means to do this lifting of the jack; and my point was that the defendant uses a spring for that and not the lower part. And then lastly we come to "manually adjustable means for determinately varying the amount of vertical movement of the hold-down".

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ132 You don't regard that stop which is present upon the machine out in the hall as "manually adjustable means", although it could be taken off in a minute and another one put on that is a little shorter or a little longer? A. To explain my answer to this question I would like to refer to the excellent testimony of Mr. McNulty regarding this adjustment of the wipers. On examining this he found that there was a little slot in here (indicating) which would permit adjustment before the screws were tightened up, and to properly guard his answer he said that although that could be done, after it is screwed up it is definitely connected. Now, as he would not properly call this "manual" adjustment, these screws, so the taking off of a spring and a screw and the forging of a new bar can not, in my mind, be called "manual" adjustment. And so I take that position, as was properly taken here (indicating).

XQ133 Properly taken there because the operator could not get hold of those screws to adjust them. A. Yes, sir. He needed tools to do it, and so here he needed tools to do it. There is no bar here, but he has to forge a new bar. A new bar could be put in, a new cam might be put in the machine, and of course those are not "manual" adjustments.

XQ134 I have here a little sketch which I want to show you, which has been made up upon the basis of these photographs, and which I would like to have you correct if it is in error.

MR. LYMAN: Your Honor, may I explain that these photographs, the photographs C and D of Plaintiff's Exhibit 31, are looking up under the machine. They don't give the view which you will get if you were looking down upon this particular apparatus.

THE COURT: I understand.

MR. LYMAN: So we have had this little sketch made which shows, as I understand it—perhaps the Doctor will correct me, but as I understand it shows this particular part of the defendant's machine as it would look if you were looking down upon it from above. Will you say whether that is correct or not, Professor?

A. From my remembrance of the machine and from my examination of these photographs, I would say that such a position of parts could be obtained if one pushed the heel band—may I mark it?

Testimony of Arthur M. Greene, Jr. (Resumed).

By Mr. Lyman:

XQ135 Yes, certainly. A. (Marking exhibit) the heel band "A" past the side supporting clips against the back stop. That is, I have never, except when the machine was actually pushed back into this position, seen such a configuration or arrangement of parts such as this, because there usually is some space between the back of the band at the bight and the hold-back.

THE COURT: The back-stop, you mean?

A. Yes, sir. Thank you. The back-stop.

XQ136 Will you please mark the back-stop "B"?

A. The back-stop is this part "B", which is only part of it. The back-stop is very nicely shown in the part "D", Your Honor, of the Plaintiff's Exhibit 32, and it is the part against which it is now raised, which I have marked "D", it is part of that complete member.

XQ137 Will you mark with the letter "C" the part which is shown on the Photograph D of Exhibit 31, with the legend "Cam-Driven Operating Mechanism for Operating Heel Band?" Please mark that "D" on the drawing. A. This is incorrectly drawn, Your Honor—I will mark the part which I believe is "D", however—in that there the rivet head which you would see on looking down there, which is connected with the spring, which is necessary to this, has not been indicated. That comes in there (marking exhibit) on my sketch, you will find.

XQ138 Carry the lead-line to the part marked "D".

A. (Witness marks exhibit.)

XQ139 I wish you would roughly sketch in Doctor, the position of this side rack. A. This is the side rack right here, which is extended here. I have drawn a view perpendicular to this.

XQ140 You sketch in what there is, roughly, here, how your sketch, Plaintiff's Exhibit 33, would appear when combined with this. Just sketch that, so His Honor can see.

At this point the sketch heretofore presented to the witness by Mr. Lyman was offered in evidence and is made part of this record as **Plaintiff's Exhibit No. 34.**

A. The part, Your Honor, which I have called "side rack" would be the part which I mark "E" on Plaintiff's Exhibit 34. There are two such side racks. Now the part which I will call "rod" (marking exhibit), which extends from the rivet head, which I mark "R" on Plain-

Testimony of Arthur M. Greene, Jr. (Resumed).

tiff's Exhibit 33, is the rod to which the rivet head which I have marked "R" in this figure is attached. The spring is placed around the rod "R" and extends backward to a crossbar and is moved by a part attached to the bar, which has a rack on it, and moved by the pinion "C". The configuration of these parts may be slightly different from the sketch, which is diagrammatic and illustrates the principle upon which the device moves. I would have to pull it apart to get the exact configuration.

XQ141 Professor, I am suggesting that in Plaintiff's Exhibit 34 you mark the part which corresponds to the part marked "A" of Plaintiff's Exhibit 33 with the letter "A", instead of with the letter "D". A. I will change that to "A" on the exhibit, putting in the lead-line, and I will change the letter "A" which I have applied to the band and make that the letter "D".

XQ142 Then the part which you have marked "A" on Plaintiff's Exhibit 34 is attached to these rack-bars E, E, so that they move with it? A. The part marked "A" fits into grooves or slots in the side of the rack-bars E, E, so that they move together; and in this machine there is a square corner, whereas in the patents in suit there is a pivot which is used, which is a little different in construction. The function, however, should be the same. That part "A" is called the "equalizer" in the patent in suit.

XQ143 However that may be, this member "A" in the defendant's machine is advanced or retracted in accordance with the motion of the cam or connections from the cam to bring that back and forth? A. No, it participates of the motion of the cam plus the movement of the spring. That is, the spring comes in there and determines the amount of movement.

XQ144 I don't want to quibble with you at all, Doctor, on that point. I just want to understand the construction. A. Yes, sir.

XQ145 That part "A" is carried on a slide, is it? That is in effect a slide? A. Yes.

XQ146 That slides back and forth? A. Yes, sir.

XQ147 As the cam operates, but, as you say, there is a spring interposed between the actual cam and that part? A. Which modifies its movement.

XQ148 Now let us look at that picture of Hoyt, the drawing of the Hoyt patent in suit, 1,508,394, as regards the heel seat adjustment mechanism.

THE COURT: Had we completed 42?

Testimony of Arthur M. Greene, Jr. (Resumed).

MR. LYMAN: I have completed it enough for my present purposes. If Your Honor has further questions I would be glad if you asked them. Your Honor may ask him questions if there is something I haven't covered.

THE COURT: No, I just don't like to cut in or interfere with your train of thought. I just wanted to know if you had fully completed your cross-examination as to claim 42.

MR. LYMAN: I completed it as far as relates to the question of infringement of the patent, Your Honor. I have not completed it as far as relates to the question of validity.

THE COURT: All right.

MR. LYMAN: But there may be something that I have overlooked.

THE COURT: No, I don't know that there is, but I say I just want to be sure now that —

MR. LYMAN: —I shall have to pass that over, because I don't know at the moment.

THE COURT: All right.

MR. LYMAN: Would Your Honor be kind enough to look either at the Hoyt patent drawing, Figure 2, or at this enlarged reproduction of it, which Dr. Greene put in last week?

THE COURT: Yes.

MR. LYMAN: Just let us compare the defendant's mechanism with the mechanism of the Hoyt patent.

By Mr. Lyman:

XQ149 Now, you point out that in the defendant's machine this part marked "A" is driven yieldingly from the cam. A. Yes, sir.

XQ150 That is, there is a spring interposed between it and the cam? A. Yes, sir.

XQ151 That is true also with reference to the part marked 188 in the Hoyt patent, isn't it? A. The part 188, called the "equalizer", is a similar part for the same purpose.

XQ152 Yes; and there is the same spring interposed between the cam and that operating member, as we call it in Hoyt, as there is interposed between the part marked "A" in Plaintiff's Exhibit 34? A. There are two springs in that and one in Hoyt. The principle of the operation is the same.

XQ153 In Hoyt we have this member 188, which corresponds to defendant's member "A" of Plaintiff's Exhibit 34, connected to two rack-bars. A. That is correct.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ154 Just like the rack-bars of Hoyt? A. Yes, sir.

XQ155 And those rack-bars operate bell crank levers on each side? A. That is correct, sir.

XQ156 Like those of the Hoyt patent? A. Yes, sir.

XQ157 And connected, pivoted to the ends of these bell crank levers there are pressure members? A. Yes.

XQ158 171 in Hoyt and the one which I indicate in pencil in the defendant's machine? A. Yes, sir.

XQ159 Same system on both sides? A. That is correct, yes, sir.

XQ160 And we have in addition, in the Hoyt patent, these links 158 on each side, which are the members to which I point on Plaintiff's Exhibit 34, representing defendant's machine? A. Yes.

XQ161 Just the same? A. Yes, sir.

XQ162 And those links 158 in the Hoyt patent carry cylinders? A. —Might I just add one word there, Mr. Lyman?

XQ163 Yes. A. That in the Hoyt patent, Your Honor, there is—this doesn't bear on the point—but there is an adjustment lengthwise of the member 158 so that if you wish to use it on a larger shoe you can move it out and make it longer. And then, also, there are more swinging motions in the Hoyt patent than in the defendant's machine. There is, however, this link in between, which is connected to the end of the swinging lever, in the defendant's machine. There is that slight difference, however, of a greater multiplicity of motion and adjustment in Hoyt to care for the things which Hoyt was looking for.

XQ164 We have in the Hoyt patent these members to which I point, which are called in the patent "loosely mounted arms carried on the support for the heel seat band". Is that right? A. Those members, 240, and 242, are in the Hoyt patent with no set-screws, and are freely mounted.

XQ165 And here we find the same parts, the same swinging arms in the parts which I indicate upon the drawing of defendant's construction? A. With set-screws.

XQ166 In that respect they are like Plaintiff's Model D, is that right? A. The plaintiff's Model D has set-screws on it and also has springs within the members 210, 171 and 174.

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: Those are the set-screws about which we had early controversy, as not being included in the second McFeely patent.

MR. LYMAN: They questioned it.

THE COURT: Otherwise known as the loosely mounted arms.

MR. LYMAN: Yes.

THE COURT: And then Mr. McNulty disassembled it.

MR. LYMAN: That is right.

By Mr. Lyman:

XQ167 These pivoted arms of the Hoyt patent, 240,242, are pressed inwardly by plungers, spring-pressed plungers in these elements 248? A. 232. There are plungers in there that are forced out by springs. These are mounted on a yoke-piece, 236.

XQ168 All the same in defendant's construction? A. Oh, no; quite different.

XQ169 Why? A. Well, in the first place the drawing for some reason has been made with the band up against the back-stop, with no shoe in there, which in my opinion rarely would occur unless it was forced back and a picture taken. The set-screws are in, which are not in the patent at all, and of course since six or eight months there have been no springs within the housings.

XQ170 So you have been informed? A. I have been informed and also have tried the machines and know that they are not there.

THE COURT: Mr. Toulmin, I wonder at this point if we could ask a question. Your position on the Hoyt patent is you say in your machine the springs are not infringing because you removed the springs; and the front part, the open part of the heel band, that has been anticipated by other patents. Is that your position?

MR. TOULMIN: Roughly, that is, Your Honor, but may I restate it in patent lawyers' language? I will try to make it as plain as I can. We have a bad habit of making things very technical. Our position is simply this, Your Honor, that so far as the outer ends of the heel band are concerned—

THE COURT: —The unyielding member.

MR. TOULMIN: The unyielding member; that we have a yielding member because we have the big springs in there that cause the whole structure to yield.

THE COURT: Of course, that is in the central part, the center of the rack.

MR. TOULMIN: That is right.

Testimony of Arthur M. Greene, Jr. (Resumed).

MR. LYMAN: The same as in the patent.

MR. TOULMIN: I want to finish my statement, so I can make it perfectly clear.

THE COURT: All right.

MR. TOULMIN: That Your Honor should construe the claim as meaning that it did not mean that spring but it had to be springs out at the outer ends to avoid infringement, then I would say the construction is fully met by one or more of these patents in the prior art.

Now let me take up the question about the set-screw, if I may. Our position is, as to the set-screw being in there, that the arms are no longer loose because the set-screw prevents their movement. That is the second point. The third point has to do with the bight spring, which Your Honor knows about. Our proof in connection with the absence of bight springs since the suit was brought, and the comparative operation with and without it, goes to the issue that there was no utility in the claim because you may go along without an essential element.

THE COURT: And you are not infringing.

MR. TOULMIN: You are not infringing if you don't have the bight springs.

THE COURT: That was my suggestion.

MR. TOULMIN: That crystalizes the issue that you have to decide.

THE COURT: Yes.

By Mr. Lyman:

XQ171 First let us deal with these bight springs. In the defendant's machine as it existed until recently the testimony is that there were springs on these members which hold these swinging arms inwardly against the band, is that right? A. I think that is right, yes.

XQ172 In the Hoyt patent the situation is that you have these loosely pivoted arms, marked 240, 242, which are mounted on this support for the back-stop of the band. They are free to swing, like my arms (demonstrating). A. Yes, sir.

XQ173 And that these members 248, these spring-pressed plungers 248 and 250, are always pushing them in, tending to urge these arms inwardly toward the heel band. That is the arrangement? A. Yes.

XQ174 That was the arrangement in the defendant's machine until they removed the bight springs? A. No, they had set-screws in there which limit that and make the two members not freely mounted.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ175 Forget those set-screws for a moment. Supposing those set-screws were out and the bight springs in; then the arrangement would be the same as shown there (indicating)? A. That is, if you have arranged it as Hoyt, you have arranged it as Hoyt.

XQ176 You say that these set-screws here serve some purpose. What is that purpose? A. It is to reduce, in my opinion—I do not know what the builder of the machine used them for, Mr. Lyman, but in my opinion it is to cut away the freely moving part of those two levers.

XQ177 Well, it simply prevents them from moving too far forward? A. Yes, sir.

XQ178 (Demonstrating): As if my arms were those arms and as if you put a stop which prevented my arms from going further forward than a certain amount, leaving them swinging up to that amount and pressed from behind by plungers to keep them up as far as the stop would let them go; is that correct? A. If your arms were free to move backward as well as forward, set-screws would do as you have explained.

XQ179 And these arms in defendant's machine, so long as the bight springs were present, had that capability of moving backward?

THE COURT: I wonder if we couldn't reach it another way. While those arms are loosely mounted and they are being under pressure from the rear, of these springs, if those set-screws just kind of counteract the effect of the spring?

MR. LYMAN: Prevent the spring, Your Honor, from forcing them too far.

THE COURT: Too far ahead, yes.

MR. LYMAN: Limiting them. That is all there is to it.

A. Your Honor will see, if that is the case, the springs can no longer press themselves against the band, as the patent claim calls for, and therefore those screws would invalidate certain of the claims of the patent.

THE COURT: Would they?

XQ180 Why do you say that the set-screws prevent those members from pressing against the band?

THE COURT: I think if we use this model here we might see it. (After court and counsel had Plaintiff's Exhibit 8-A before them): What I had in mind here was this spring here (indicating), whose purpose it is to press this.

A. Your Honor, if these screws are pressed inward it will force the two arms back, and therefore if the tight-

Testimony of Arthur M. Greene, Jr. (Resumed).

ening of the band on this position, not only in defendant's but even this one, if the tightening of the band guided that it pushes forward, normally they are pressed toward the band. These do not press toward the band; the band presses toward them and pushes them back. If it is in that position you see, they just stand there and don't come back, and that is limited by this band.

THE COURT: I understand that is under power.

A. And if this is screwed in, Your Honor, it is pushed back from the band and no longer performs its function until the band has pressed against it. Normally it does not press against the band.

THE COURT: But the claim of the patent refers to "loosely mounted arm".

A. Yes, sir.

THE COURT: And it is your contention that these screws—

A. —They can be loosened.

THE COURT: But they are in there now and they swing. A. Yes, because there is nothing behind it.

By Mr. Lyman:

XQ181 In the structure shown in the Hoyt patent we have by reason of the provision of these swinging arms and their spring-pressed plungers, which always tend to move them forward unless they are prevented by some stop, a resilient seat for the heel band when it is shifted in by power? A. If there is no stop such as the set-screws.

XQ182 But, Dr. Greene, the set-screws do not prevent the yield of those members rearwardly; they simply prevent their going too far forward. A. After the shoe is forced into the heel band by a draw-in mechanism of some kind, yes, the springs and their cooperating parts do press against the band; but until that occurs with these stops in there that is limited in amount; without the stops in there they would go in still further and come against the part of the support which is numbered 234 in the Hoyt patent.

XQ183 Do you know how these set-screws are adjusted in the defendant's machine? A. No, sir, I do not.

THE COURT: It is your position, just reduced to its lowest analysis, that these two set-screws nullify that claim?

A. Not entirely, Your Honor. You have got to put a solid part in there. Yes, they nullify the claim be-

Testimony of Arthur M. Greene, Jr. (Resumed).

cause normally the set-screw throws it back, upon which the claim was for.

THE COURT: It is your position that those two set-screws here nullify that claim?

A. Nullify that part of the claim.

THE COURT: As to the loosely mounted arms?

A. Yes, sir.

At this point a short recess was taken, after which Dr. Greene returned to the witness stand and the trial proceeded as follows:

By Mr. Lyman:

XQ184 Professor, you said that, with reference to the drawing Plaintiff's Exhibit 34, as you had seen the defendant's machine the heel band didn't abut up against the back-stop which is marked "B". A. Unless it was pushed there.

XQ185 It would be pushed there as soon as the shoe was put in there, wouldn't it? A. That is right.

XQ186 So this drawing Plaintiff's Exhibit 34 represents the parts of defendant's machine as they would be when a shoe was put in position? A. That is correct, yes, sir.

XQ187 With reference to that stop which appears on defendant's machine— A. —Isn't it on that lower picture?

XQ188 No, that is not the one I am speaking of. A. I know what you mean.

XQ189 I am speaking now about the stop which in defendant's machine limits the extent of the vertical motion of the hold-down and which can be seen in the Photograph A of Plaintiff's Exhibit 29 at the point where I put my pencil, just behind that spring which I point to. You understand what I mean? A. Yes, sir. There is a better photograph which you have, I think which has not been mounted.

XQ190 Will you show me that? (After examining photographs in evidence): Maybe that is the only one that you have but I was reasonably sure you had taken a large one of that.

XQ191 Do you find any photograph that shows that more clearly? A. It was the other side of the machine, which shows the serial number, and I thought that was the one that I had in mind.

XQ192 Which one did you have in mind? A. I thought you had the stop which is fastened beneath a

Testimony of Arthur M. Greene, Jr. (Resumed).

bolt which holds a spring that pulls the arm on the hold-down mechanism against the cam face.

XQ193 Will you draw a lead-line to that stop and mark it with the letter "X" on Photograph A in Plaintiff's Exhibit 29? A. (Marking exhibit): I have so marked it on the part "A" of Plaintiff's Exhibit 29.

XQ194 Will you mark the same stop on Photograph C of this same exhibit with the same letter? A. (Witness marked exhibit):

XQ195 An operator of a machine could easily enough, by simply loosening the screw which attaches this stop to the frame of the machine and putting in a little shim, change the length of that stop, could he not? A. It could be done.

THE COURT: Is that your theory as to that?

MR. LYMAN: It would permit, Your Honor—in the machine as we have it here in the hall no upwipe is possible for the reason that the cam does not contain the proper motion to give an upwipe to depress the hold-down and the shoe until at a time before and a time after the heel band is clamped about the shoe.

THE COURT: But with this addition it would permit an upwiping; is that the theory?

MR. LYMAN: No; in that machine it would not.

THE COURT: I say, with this suggestion you are talking about it would permit it?

MR. LYMAN: No, Your Honor. In the defendant's machine we have in the hall you could not get an upwipe because the cam does not provide for a clamping of the heel band about the shoe until after the hold-down is depressed; but this claim, one of the elements of this claim is an adjustment for the throw, the vertical movement of the hold-down. We do not think the claim is limited to upwipe, but that has been talked about, whether there was an adjustable stop there or not, as you know. I am bringing out the fact that if, instead of the adjustable stop shown in the Moen's catalogue and which Mr. Ryan testified was present in defendant's machine when he saw it with this stop that they have now in there, an operator could obtain the same adjustment if he just loosened up that screw and put in a little shim. That is all I am inquiring about now.

By Mr. Lyman:

XQ196 I would like to turn to the claims of the Hoyt patent which are involved in this case, claim 19, first, and let us again get your position as to why that

Testimony of Arthur M. Greene, Jr. (Resumed).

claim is not infringed in the defendant's machine. If I understand your position, the reason why you say that claim is not embodied in defendant's machine is because in defendant's machine there are not the unyielding connections between the operating member and the band which the claim calls for. Am I correct? A. That is my belief, and I would like to explain why.

XQ197 Very good. Proceed. A. If the court please, on page 4 of this patent, beginning at line 123, we find the following words—and I will call attention to the picture in Exhibit E of the defendant at the extreme right of that list, so you might follow the numbers: "The arms 158 and 160 are fulcrumed on the head 4 at 170 and 172 respectively and, as shown, are operated by links 171 and 174 from bell crank levers 176 and 178 pivoted at 180 and 182 to the head 4." That is one sentence. Then the next sentence: "Each of the bell crank levers 176 and 178 is formed with a toothed segmental portion, the segments being arranged to mesh with rack bars 184 and 186 slidably mounted in the head 4. The arms 158 and 160 are moved synchronously toward and from the work to cause the band 140 to clamp or release the work by mechanism comprising an equalizer 188 having its ends received in recesses in the ends of the rack bars 184 and 186 respectively and carried by a head 190 on a rod 192 sleeved into a housing 194." That is, this mechanism which does the work goes directly from the band up through the housing and before it can get into the housing the spring is interposed, so that sentence includes the spring in it, and because of that—

THE COURT: —It is not unyielding.

A. It is yielding when you get into that, yes, sir. That is, the claim "unyielding", if it means anything, is shown in this art by this long list of pictures.

THE COURT: I know, but right now on this "unyielding".

A. I can't see where the "unyielding" comes in. The only place that "operated" and "unyielding" come together is in the little pin which connects 170 and 171. That is the only unyielding part which is operated, according to these specifications, and when you come to the next sentence you go a little further and then the final one says they "are moved synchronously toward and from the work to cause the band 140 to release the work by mechanism comprising". The equalizer is there but it goes right back to the housing 194.

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: And it is your position that because they all work together and depend on this spring that it is not unyielding.

A. That is right, sir, and that the unyielding part of this machine is found in practically all of the patents which have been cited in this case, in the prior art.

XQ198 I am not asking about the prior art at this time. You have already said, Professor, that insofar as that spring is concerned which is interposed between the cam and this member 188 of the patent or the corresponding member "A" of defendant's machine, the defendant's machine and the Hoyt patent are alike; or is that spring interposed between the member and the cam in both cases? A. Yes, sir.

XQ199 Then your argument that the defendant hasn't unyielding connections is also an argument that there are not unyielding connections in the structure of the Hoyt patent itself?

MR. TOULMIN: We object.

THE COURT (After question was read): You may answer that "Yes" or "No" and explain.

MR. TOULMIN: I was referring to the word "argument", Your Honor.

XQ200 Your position, I could just as well say. A. (After question was read): Yes, that is my position. There are yielding connections between the housing 194 recited in this description of the action of the Hoyt patent and the bands.

XQ201 You will notice that the claim speaks of an "operating member", claim 19, and unyielding connections between that member and the band for forcing the ends of the band against—two ends of the band that means—against the shoe. If you will look at the drawing of the Hoyt patent, Figure 2, if we regard the member 188 as the "operating member" that the patent is talking about, that is a correct description of what the patent shows. A. If that could be the operating member as it is, could be so-called in the prior art patents.

XQ202 I don't ask about the prior art patents. Please divorce your thought from the prior art patents for a moment. A. I can't.

THE COURT: The question is whether that is unyielding in effect.

A. Your Honor, if you will look at the picture, between the equalizer and the band the members are of fixed length and "unyielding" would be the word to be used there. There is no question of that.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ203 That is also true in the defendant's machine if we regard this part which you have marked with the letter "A" on Plaintiff's Exhibit 34 as an operating member? A. An operating member—not *the* operating member but *an* operating member.

XQ204 An operating member. Then there are in the defendant's machine the unyielding connections from this member "A" which operates the pressing members at the right and left at the forward ends of the band. A. That is evident from the drawings.

XQ205 You say that it is improper to call that member 188 of the patent or the member "A" of Plaintiff's Exhibit 34 showing defendant's machine, an operating member? A. I do, because the patent doesn't call it that. The patent definitely says it is an equalizer, to act as a singletree on the front of a wagon with a pair of horses,—just the same thing.

XQ206 It is a link in the chain of power connections where the connections begin to divide, those on the right-hand going to the right-hand of the band and those on the left-hand going to the left-hand of the band; that is true, isn't it? A. That is true.

XQ207 That is true in defendant's apparatus as well as in the plaintiff's? A. Yes.

XQ208 Do you or do you not regard that expression "an operating member" as a proper designation of the member 188 of the Hoyt patent? A. It is improper.

XQ209 It is improper as a designation of the member "A" of defendant's machine? A. Yes, sir.

XQ210 Did you prepare the drawings that have been produced in evidence? A. I beg pardon?

XQ211 Did you prepare these colored drawings that have been produced in evidence? A. I worked on them.

XQ212. Who did the coloring of them? A. I did some of it.

XQ213 Who else worked on it? A. Well, I imagine Mr. Kath and Mr. Williams and Captain Greer. We all worked together.

XQ214 Who is Mr. Kath? A. Mr. Kath is Mr. Bruno Kath, of the Moenus Company.

XQ215 Who is here in the room? A. He is in the room.

XQ216 You all worked on these drawings? A. Yes.

XQ217 Who put on the legends? A. The legends? I don't know.

XQ218 You did not? A. No, sir, I did not.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ219 You are not responsible for them? A. No, sir.

XQ220 You don't vouch for them? A. I don't doubt they are right. I will be very glad to have you ask me about any of them.

XQ221 I am going to call your attention to Defendant's Exhibit S which you produced, representing the Snow Patent 946,708. I call your attention to the words "Operating Rod or Band 24". A. Yes, sir.

XQ222 What does that member do? A. That is the rod which is connected to the unyielding spring, and is nicely shown in the patent in suit.

XQ223 Not in the patent in suit. A. I beg your pardon; in the prior art mentioned.

XQ224 You mean in the Snow patent? A. The Snow patent. It is better seen on another figure. It is well seen, Your Honor, in Figure 2 of the patent, which shows the spring coming right next to that member, and that bar is the bar—is described in the patent as a bar which, through the spring, operates from the cam at the front to move the crossbar or equalizer going across the front.

XQ225 And that operating rod 24 in the patent is connected by a spring; of which you see a trace, to a foot treadle. A. Yes, or a cam.

XQ226 Or a cam. So that interposed between this operating rod or band 24 and the source of power, which is the treadle or a cam, there is a spring? A. That is right, sir.

XQ227 Just the same as in the defendant's machine and the Hoyt patent? A. Yes, sir.

XQ228 And you call that an operating bar? A. Because if you will look in the patent—I am not sure, but if you look at the patent I think it is probably called an operating bar.

XQ229 Is it a proper description of it? A. If you wish to call it so, yes.

XQ230 I am asking you. A. If you wish to call it so; and if the patent calls it that I would say it is.

XQ231 See if the patent calls it that, 24. A. (After examining patent): It calls it a "rod".

XQ232 It doesn't call it an "operating member". A. I don't find it in the patent.

XQ233 But you have called it in your drawing an operating member and it performs exactly the same function as being the link in the chain of mechanism from the initial source of power, the treadle or cam,

Testimony of Arthur M. Greene, Jr. (Resumed).

and the heel band presser members, as the link, as the member "A" of defendant's machine or 188 of the patent? A. You see, Mr. Lyman—

XQ234 —Can you answer "Yes" to that? A. (After question was read): The answer is that no, it is not.

XQ235 Not the same? A. No.

XQ236 Not the same in defendant's machine? A. No.

XQ237 Why not? A. Because there is an equalizer which comes beyond that, which is the same as this equalizer. That is, if you will notice in this exhibit, in front here there is this cross member, which is called "Side Pressure Equalizing Yoke", which takes the place of the equalizer on this figure (indicating).

XQ238 So you say it is proper to call this band 24 of the Snow patent, this rod of the Snow patent an operating member but it is improper to call the element 188 of Hoyt or the element "A" of defendant's machine, as shown in Plaintiff's Exhibit 34, an operating member? A. It is not right to call it that if Mr. Hoyt does not call it that in his patent.

XQ239 That is the reason you say it isn't right? A. I also say it isn't right because it does not do the operating. Nor is it the complete operating bar. It is part of the system.

XQ240 And yet there is a spring back of it? A. There is a spring back of it, yes, sir.

XQ241 I call your attention to your illustration, Exhibit A-1, of the MacLeod patent 1,030,519.

THE COURT: It is the same principle—"operating plunger" that it talks about.

XQ242 Yes. There is a member you call an "operating plunger" in that machine. A. Yes.

XQ243 Is it proper to call that an "operating plunger"? A. It is called an "operating plunger" on that drawing. In the specification it is called "a plunger 31".

XQ244 Well then, I suggest that you draw a circle around this word "operating" on your Exhibit S-1. Don't obliterate it but draw a line around it and write in your handwriting "Not correct". A. Your Honor—

MR. TOULMIN: —I object, Your Honor.

A. —I would not say that this is not correct. It is operating, and to say it is not correct would be not to tell the truth.

THE COURT: Of course, the point about it is it is just by way of comparison, going to the weight of your

Testimony of Arthur M. Greene, Jr. (Resumed).

testimony, since you take the position that 188 isn't an operating member, and on these other exhibits of the defendant they are described as operating rods for bands, and so on, and apparently are just simply links in a power chain. That is all they are.

XQ245 I won't ask you to read anything about it. A. I will be very glad to draw the circle. You want it on each of these?

XQ246 You say it is correct on— A. —No, I did not say it is correct.

XQ247 You did not say it is correct? A. No. You asked me if it was the same as the operating member of Hoyt.

XQ248 You think it is erroneous as an observation on Exhibit S. If you think it is erroneous, draw a line around it on Exhibit S. A. I am marking this with a circle, as in the other one, as indicating the word "operating" refers to part of the system which does the operating.

XQ249 Here is another drawing which you have submitted, Exhibit T, representing the Plant patent, 958,280, where you have made another similar mistake, haven't you, Professor? A. In that sense I should say it was. In this particular one there is the same arrangement of the spring going down to a cam-moved mechanism.

XQ250 So you had better draw a circle around that in explanation. A. I did so draw it.

XQ251 We have now, I think, dealt with the only reason that you have advanced as to why claim 19 of Hoyt is not infringed. Will you now turn to claim 21 of Hoyt and see if I understand your position as to why claim 21 of Hoyt is not infringed? Am I correct in my understanding that the only reason why you think that claim 21 of Hoyt was not infringed is because that same old clip that we have spoken about so many times has been sawed off in defendant's machine? A. Before answering your question might I go back to claim 19, because you did not mention all of the elements which I said we did not have.

XQ252 Go ahead. A. The last part is "separate fielding means operating on each side of the band adjacent to the right of the band to press such portions of the band against the shoe". That part should be included as one of the elements which we do not have.

XQ253 You don't think defendant's machine has that element of claim 19? A. No, sir.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ254 Why not? A. Because there are not separate yielding means on each side of the band. They are with bars inside of the housings and the set-screws.

XQ255 You mean that with the bight springs removed they don't infringe it? A. Yes, with the defendant's machine as brought before the court.

XQ256 With the bight springs removed. Let me hear why you say claim 21 is not infringed by defendant, and I will repeat the question I put before, in substance. Is it my understanding the reason why you say claim 21 is not infringed is because that clip attached to the heel band has been cut off as in defendant's machine? A. That is the reason for the objection to this element, or rather, the statement that it is not in the defendant's machine, because the supporting part of the band which is mentioned in the next part of the claim refers to the back support and not the side support. So that by cutting the clip off, or having the wing-screw drop off and remain off this means of supporting the bands, and described on page 4, beginning at line 72: "The clamping band 140 is composed of leather or other suitable flexible material. In order to afford support for the band at its rear end or, in other words, at the bight of the band, a clip 142 is riveted to the band at such point. The clip 142 is in turn carried by a stud shaft or post 144 loosely mounted in a carrier 146 slidable in a guideway on the head 4. Downward movement of the post 144 is limited by an enlarged part 145. In order to permit the clamping band 140 to be appropriately positioned for operation on shoes of varying sizes, the carrier 146 is adjustably secured to the head 4."

XQ257 I am not asking for a discussion, Professor. I just asked you a simple question, which was whether the reason why you say that claim 21 is not infringed is that that clip has been cut off of defendant's machine. A. That is correct.

XQ258 That is all, then. I heard your explanation before. I wish you would identify, by the way, then in one of these drawings the clip that has been cut off. You will see it in one of these photographs. In Photograph B of Plaintiff's Exhibit 32 I think it would be well shown. A. The clip which has been cut off—do you wish me to mark it?

XQ259 Yes. Mark it with a letter. A. It is shown in two of these sections, one which I will call "Y" on B. of Plaintiff's exhibit 32; and then in the "D" part of this exhibit I will also call it "Y". My pen slipped and made the "Y" into an "X" when I started.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ260 Will you, by the way, mark with the letter "X" on Photograph B of Exhibit 32 the place where the wing screw would be screwed into if the clip were not removed? A. I have so marked it on Section B of Exhibit 32.

MR. LYMAN: I guess that is plain enough, Your Honor.

THE COURT: Oh, yes.

By Mr. Lyman:

XQ261 Can you tell me, Professor, what the color scheme that you have followed in making these numerous drawings is? A. Yes. We have endeavored to use green for the wiper and its associated parts; orange for the heel band; red for the support; and purple for pressure members or mechanism.

MR. TOULMIN: Mr Lyman, I think he neglected brown for the tackers.

XQ262 Mr. Toulmin says you neglected the tackers. A. There is a blue shown on the larger exhibits, Your Honor. There is brown used for the tackers, there is yellow used for the hold-back and operating mechanism for the jack, and the hold-down and its associated parts, blue. I think I have covered those now.

XQ263 Will you tell me if you find any single patent in the prior art which shows all the elements of claim 6 of McFeely? A. I find the early McFeely, 1,129,881; and by the drawing and specification the early patent to Copeland, 244,714. If we mean by "cooperation" the rigid attachment of the wiper and tacker but in the narrow interpretation, the exact—let me get that. If we mean by actual connection "cooperation" then Copeland. If, however, "cooperation" between the two means the relative movement which is in the patent in suit, then McFeely 1,129,881 has such arrangement. So I think possibly the McFeely 1,129,881 is the best patent.

XQ264 Those are the only two which in your view embody all the elements of claim 6? A. Well, I feel that Keyes, 1,023,854, might be said to have all of claim 6.

XQ265 Tell me whether you find in the prior art any single patent which discloses all the elements of claim 85 of the McFeely patent in suit, if you please. A. The McFeely patent 1,129,881 as interpreted by the plaintiff has all the elements of claim 85.

XQ266 Any other? A. Keyes, possibly, and Copeland, possibly.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ267 Take claim 23, if you please, of McFeely. Let us assume for the moment that it covers the defendant's machine with that clip in use and the wing-screw in use. Do you find any patent that shows the elements of that claim, reading it in that way? A. I believe that Brock, 1,188,616 does so.

XQ268 Brock, 1,188,616? A. With the wing screw in position.

XQ269 Supposing it reads upon Defendant's machine as it is now mutilated by cutting off the clip; are there any other patents than that same Brock patent that anticipate it? A. McFeely 1,129,881 meets all the elements of claim 23 as interpreted by the plaintiff in this case.

XQ270 Turn to claim 91, please, and name again, tell me whether you find any single patent of the prior art that shows all the elements required by claim 91 of McFeely. A. Is that the end of the question?

XQ271 Yes, sir. A. I find that the Brock patent 1,188,616, and the McFeely patent 1,129,881, have all of these elements. The Brock patent 601,935, can also be said to have them, as well as the Brock patent 1,002,818, and Cavanagh, 1,130,142.

XQ272 Does that answer apply whether or not the claim is interpreted as limited to a machine in which that clip is present and in use? A. Without looking over all of these patents, Mr. Lyman, I would say that outside of the McFeely patent 1,129,881, the others have the clip or the equivalent of it. If you wish me to, I will take the time to look at the others, but I think they all have it.

XQ273 I think it is unnecessary now. Do you find in the prior art any single patent which shows all the elements of claim 42 of McFeely? A. I do not in one patent find all of the elements.

XQ274 Do you find any single patent of the prior art which includes all the elements of Hoyt's claim 19? A. I find the Snow patent, 946,708, with all of the elements of claim 19; I find the McFeely patent 1,558,737, to have the elements; I find Figure 19 of the McFeely patent 1,129,881 to have the elements.

XQ275 That is, each of those references you say shows all of the elements that are contained in claim 19 of Hoyt? A. Yes.

XQ276 Do you find any single prior art patent that shows all the elements included in the combination covered by claim 21 of Hoyt? A. I find the Pym patent, 1,368,968, to have all of the elements. I find the McFeely

Testimony of Arthur M. Greene, Jr. (Resumed).

patent, 1,558,737, to have the elements in equivalent form. I find the McFeely, 1,129,881, Figure 19, I believe would have the elements.

MR. LYMAN: If Your Honor please, the marks that the witness drew around these words, "Operating" in Exhibits S, T and A-1 are on my copies, and I should like to have him put them on the original exhibits.

A. Could I do that a little later?

THE COURT: We can do that later.

MR. LYMAN: All right, sir.

By Mr. Lyman:

XQ277 Many of these prior art patents relate to what is known as the "bed" type machine, lasters? A. Yes, sir.

XQ278 In which the operator has to manipulate various levers, hand levers, knee levers, do his wiping operations by hand, do his tacking operations by hand? A. Some of them are that way. There are one or two that are operated by a crank and connecting rod. I think one of the Snow patents shows that.

XQ279 That you would say would be a bed type machine, with a little power aid to do some of the operations? A. Yes.

XQ280 In the first place, I would like you to collect together all the patents that relate to that bed type machine and lay them to one side; for the present purposes, you can do it more easily. I think, by taking the exhibits here, and see what we have left after you are done. A. The Snow patent, 946,708, shows bed lasting. The Snow patent 701,442 shows bed lasting. The Lombard patent 542,445 shows bed lasting. The Eaton patent 596,323 shows bed lasting. The Brock patent 601,935 shows bed lasting. The Plant patent 958,280 has a hand-controlled wiper lever; the clamping part may be operated by power. It is primarily a lasting machine and is flat, and if "bed lasting" means complete operation by hand, it is not. If it means a flat bedded machine, it is.

XQ281 In general that Plant shows the same type we saw over at Krippendorf-Dittman's, where there is a power element— A. —I would like, if possible, to change the statement which I made about the Snow patent 946,708, which has a flat bed and has mechanical means for binding. We come to the Brock patent 1,002,818, which is associated with a later Brock patent, showing the clamping means to be operated by machinery. The wiping means are operated by hand. The laster is flat and if such a machine with certain power parts is bed lasting, this is bed lasting.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ282 Which Brock is that? A. 1,002,818. The Keyes patent 1,023,854 is not a bed laster. The MacLeod patent 1,030,519 is not complete and it is merely a clamping means which is moved by other parts, and it is flat; and if such a machine is to be called "bed lasting" this is bed lasting. The Bayard patent 1,068,843, which shows wiping means directly connected to tacking means and moving with these tacking means, as a unitary structure, is not a bed laster. The McFeely patent 1,129,881, is not a bed laster. The Cavanagh patent 1,130,142, is a bed lasting machine, and with power operation on the bar 62 it might be called a machine operating on the band, but if such is called a bed laster that might be so called. The Brothers patent 1,135,945 is not a bed laster. The Brock patent 1,188,616, which corresponds to an earlier one as far as action is concerned, is mechanically operated on the band, the wiper is hand-controlled, and if such a flat machine is a bed laster this is one. The Merrick patent 1,245,117, is not in the true sense of the word a bed laster in that it employs a number of other things. The Pym patent is a flat machine with operating parts and no tackers, and if such a flat machine operated by mechanically driven parts would be a bed laster, this is a bed laster. I think I have covered all of them, Mr. Lyman.

XQ283 The bed machine that we saw over at the Krippendorf Dittman factory had some power. A. What is that?

XQ284 The bed machine that we saw at the Krippendorf-Dittman factory had power means for operating the clamp, I think, didn't it, some power means connected with it? A. You mean on the bed laster?

XQ285 Yes. A. I think it did.

XQ286 But still that was a bed machine. Now what have we left here after you have taken away the bed type machines? A. They are all there together (referring to exhibits which witness had been using).

XQ287 I wanted you to separate them.

THE COURT: He can answer the question without referring to them.

A. The Bayard and the McFeely and the Keyes are definitely not, and also I would say that because the early Copeland, 244,714, a tackler and wiper may be operated by power, with adjustable means, I would include that very early patent of 1881 as one of the non-bed-lasters.

XQ288 All right. Take this Keyes patent 1,023,854; that machine is a special machine for driving two tacks

Testimony of Arthur M. Greene, Jr. (Resumed).

on opposite sides of a lasted shoe, isn't it? A. That is correct, two on each side.

XQ289 Two on each side of the lasted shoe? A. Yes.

XQ290 And the shoe has been lasted, the heel seat has been lasted prior to the time that it is presented to this machine; is that right? A. The picture shows it that way, yes, sir.

XQ291 Your Honor has that in mind (exhibiting to the court). That machine takes a shoe that has already been lasted and to which a welt has been applied, then puts in a couple of tacks on opposite sides of the insole? A. That is correct.

XQ292 The Bayard patent 1,068,843, that is a toe wiring device, isn't it, Professor? A. That is a toe lasting device shown here. The patent refers primarily to the front hand-driven tacker, and it works on the toe but, as Brock and a number of others say, the toe and the heel lasting are identical; and this is for a toe.

XQ293 Just a minute. Will you kindly look at your copy of the patent before you say it is a lasting device? It says it is a toe wiring device. A. I beg pardon?

XQ294 The patent describes it as a toe wiring device. A. That is correct but, as I said, Mr. Brock in his patents and Mr. Snow and Mr. Eaton all say it is the same.

XQ295 We are talking about this particular patent. This patent shows a special machine which is adapted to be attached to what is known as a "pulling over" machine, isn't it? It is an attachment for a "pulling over" machine. A. Well, it is an attachment for this machine which has the tacker and wiper attached to each other that go in; and this puts in two tacks in the front for the purpose of supporting a wire that is to go around and hold the upper against the channel lip.

XQ296 Is this correct? What this machine does is to drive an anchor tack on one side of the toe for anchoring a wire and then to drive another tack on the opposite side of the toe for anchoring the other end of the wire? A. The patent is directly connected to that but the patent specification definitely states that the thing which carries the back tackers—there are three of them shown—also carries the wipers. The direct claims

XQ297 —If you will just confine yourself to answering my questions, Professor, I think we would get along a little faster? A. Yes, sir.

XQ298 The machine shown in this patent is a "pulling over" machine, isn't it? A. I am not sure about the name.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ299 Will you look at your copy of the patent, please? At the right of Fig. 1 is a hand device which pays out a wire. The operator attaches that wire to a tack that has been driven by this device, carries it around this loose upper material, and anchors the wire around the tack that has been driven on the other side by this device. A. I believe the wire is attached when the tack is driven.

XQ300 And this device that drives the tacks is a hand-manipulated device. The operator moves these handles 34 between his fingers and jiggles it around and brings it up to the machine and then jiggles the other one around by hand the same way. A. That is, he does this front tacking with a wiper attached to the tacker—the front tacker I am referring to now—by hand. That is correct.

XQ301 Have we anything left to talk about except Copeland and McFeely? A. That is for you to say, sir.

XQ302 I want to know. We have discarded the bed machines and have now taken up Keyes and Bayard, which you have not said were bed machines. There is another one, Merrick, 1,245,117. Did you speak of that? A. I said that the Merrick machine was not a bed laster because of the other functions which it had to perform. It has in detail the method of varying the amount of motion of a hold-down and it also has upwiping, with which we are not now concerned; but the principal purpose of this patent was to show the stop for limiting the amount of motion, not the position but the amount of the hold-down, and also to show upwiping.

XQ303 All right. Since the upwiping claims are out of the case we will lay that aside. Now I have a note that you spoke of Brothers patent 1,135,945, and produced a drawing on that. A. Yes.

XQ304 That machine there is a combination of a "pulling over" machine and a manual device for manipulating a wire, a toe wire; is that correct? A. The machine has an adjustable wiper for predeterminately adjusting the wiper to the shape which is to be wiped by the hand lever 90.

XQ305 That is the reason why you referred to that patent? A. Yes, sir.

XQ306 Another one which has been produced in evidence is Stiggins, 1,182,630. I don't know whether you produced any picture of that or not, but that is merely a work support for use in a hand method lasting, isn't it? A. That is a special machine that has a special

Testimony of Arthur M. Greene, Jr. (Resumed).

elliptical motion at the top and it has the band forced in by side members, side members which apply pressure above the bottom, and it can be adjusted to right and left.

XQ307 It is a work support for hand method last-
ing? A. Yes, it is operated by hand.

XQ308 Now the McFeely patent 1,135,958 just shows a form of "pulling over" machine; is that correct? A. Yes.

XQ309 That is a "pulling over" machine? A. I don't think I described that.

XQ310 I don't think you did either, but it is among the patents that were included in that book. A. I don't think I did.

XQ311 There remain the Copeland patent of 1881 and the McFeely patent 1,129,881, upon which the present patent, the patent in issue, purports to be an improvement. That is correct? A. Yes.

XQ312 With the exception of the Copeland patent and that early McFeely patent 1,129,881, do you find anywhere in all this art any automatic laster, any automatic heel seat laster? A. May I ask what you mean by "automatic"?

XQ313 Well, I mean a machine such as is shown in this McFeely patent, in which the operator presents a shoe to the machine, the machine does the work. A. He has to adjust it first, though.

XQ314 Yes. A. He has to first adjust it.

XQ315 Oh, yes. A. And the early McFeely would do that. I believe—I have no evidence, of course, except from the patent drawing of Bayard, which is only a fragment of the remaining part—I think that might be the same thing.

XQ316 You think Bayard would? A. Yes. Not the part described in the patent but the part described in the patent picture of 1,068,843, in which at this late date of 1911, with so much prior art in front of Mr. Bayard before he died, I think there might be in that. There is no word in the patent that says it except it states that the wipers and tackers 8 work together.

XQ317 I think we will dismiss the thought that that shows an automatic heel seat laster unless you find something in the patent to indicate that it does. A. The bed lasters are all automatic. After you once get them set you then push the treadle, you pull a handle, and the parts are so arranged that they do the work which you want to do. The court saw the various adjustments to change the—

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: —But that isn't automatic, though, is it?

A. So far as the action is, Your Honor. You move your handle instead of moving by machine. You set it to do the work and then you do it. If it is machine driven—

THE COURT: —No, I think in the sense that is meant here that after the wipers are held in place these tacks are driven—after it it is wiped over and held in place the tacks are driven by hand.

XQ318 Yes. A. The tacker and wiper.

XQ319 Yes, by an automatic heel seat laster I mean a machine which will, when the operator presents it to the machine it will automatically take charge and do the wiping and do the tacking and present you with a heel seat that is lasted. Do you find anything in the prior art, anything that purports to do that except the early McFeely patent 1,129,881, and you say we have the Copeland patent. A. And Copeland patent. If you mean by "automatic" machine-driven, I find no such thing.

MR. LYMAN: Now, Your Honor, it is one o'clock.

THE COURT: You will take some further time?

MR. LYMAN: Yes.

MR. TOULMIN: Your Honor, Professor Greene tells me he is under great embarrassment in that he has an appointment of many days' standing to attend a meeting in Princeton tomorrow. He has told Mr. Lyman also, I think. He would like very much to go home today. We have a number of witnesses to keep us busy tomorrow.

MR. LYMAN: I have told Dr. Greene that would be satisfactory to me.

THE COURT: There is no objection except of course we have other cases set and I am trying to keep those other lawyers satisfied. They have witnesses coming from Iowa. Have you any idea just when we will finish?

MR. TOULMIN: Your Honor, I think I will be all day tomorrow with these fact witnesses, dealing with the miscellaneous facts which I have to get one way or another, and then I am through except for redirect questions I would want of Dr. Greene, which will not be many.

THE COURT: Would you say you will finish on Wednesday?

MR. LYMAN: Your Honor, I don't know how much longer it is going to take for cross-examination and after that is done we shall have some rebuttal. Of course, I can't tell until I know what the other side is going to

Testimony of Arthur M. Greene, Jr. (Resumed).

have. By the way, Mr. Toulmin, have you obtained those bills for these wing screws, these invoices?

MR. TOULMIN: I have had a chance to talk with Mr. Williams this morning. He will bring them tomorrow and I will have the whole thing for you.

MR. LYMAN: May I ask if the fact testimony is going to relate to these defendant's machines?

MR. TOULMIN: Yes, partially. I have one witness on some miscellaneous matters.

MR. LYMAN: Defendant has told about doing away with the wing screws and doing away with the bight springs and sawing off the clips and I think there is no way we can contradict that testimony. It is probably true. At the same time I have no doubt really that that is the present condition of the machine. At the same time I feel that perhaps, in order that the whole case may be before us and we don't admit anything that isn't so, that it would be desirable for us to have someone go down and see those machines, and take advantage of this afternoon's recess, if we could.

MR. TOULMIN: You would have to look at our production line. I would certainly object to that.

THE COURT: What is that?

MR. TOULMIN: I say to look at our machines would require going into our factory to see what other equipment we have got there, which we do not want seen by these people because they are competitive in that sense.

MR. LYMAN: All right; if that is the objection, all right, sir.

MR. TOULMIN: I expect to put a witness on the witness stand who has inspected and tested the machines. If Your Honor wants to appoint someone to check the machines as an impartial party, I have no objection.

MR. LYMAN: There is no way we can see it without our trained experts.

MR. TOULMIN: The only way we could do is to take the machines off the production line and switch them. That is the only way we can do.

MR. LYMAN: I don't want to be in the position, Your Honor, of having given our United Shoe experts into that factory against their will.

THE COURT: Then we will recess until two o'clock and adjourn this case until tomorrow at ten o'clock.

Thereupon an adjournment was taken in accordance with the order of the court.

MORNING SESSION,

TUESDAY, JANUARY 24, 1939.

Court met pursuant to adjournment, counsel being present on behalf of both parties.

Thereupon,

Forrest L. Williams,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 State your full name. A. Forrest L. Williams.

Q2 Your residence? A. Portsmouth, Ohio.

Q3 Your occupation? A. Shoe manufacturer.

Q4 How long have you been engaged in that business? A. Since 1932.

Q5 With what company are you connected? A. The Williams Manufacturing Company.

Q6 What is your official position with the company? A. Secretary and treasurer.

Q7 And your general duties? A. My general duties are to head up the purchasing department, the office end of the business, and the legal matters which might be before us.

Q8 Did you have anything to do with purchasing the four machines which are the subject of the instant controversy? A. I did.

Q9 Will you tell the court about when it was those machines were purchased? A. Three of them were purchased in the fall of 1933 and one in the spring of 1934.

Q10 Are those machines different or alike? A. To all intents and purposes they are alike. The first three are identical and I think there have been one or two minor changes which were not used by us on the fourth machine, which came in some two or three months after the first three.

Q11 What change was that? In the last machine there is a little hole on the left of the machine as you face it, above this stop which has been discussed in the court room, into which has been drilled a screw hole. On the other machines that is not present.

Q12 To your knowledge, Mr. Williams, have any changes been made in these machines? A. No major changes. I think the clips have been filed off of the back of the heel band, but no other changes of importance with the possible exception of taking out certain springs.

Testimony of Forrest L. Williams.

Q13 While we are on the subject of the clips being sawed off, have you any idea, can you tell the court from memory about when that was done? A. As I recall, it was early in 1936.

Q14 Are you sure about that date? A. No, I am not sure about that. It was late in 1936; it was immediately following the visit of the attorneys for the United Shoe Machinery Corporation.

Q15 That visit was in December of 1936? A. December of 1936, so it was either the very last of 1936 or the very first of 1937. It was just a day or two after those gentlemen were there.

Q16 I will hand you a letter and ask you who wrote that letter dated January 18, 1937. A. I did.

Q17 And to whom is it addressed? A. Toulmin & Toulmin, Dayton, Ohio.

Q18 Was it actually mailed? A. Yes, sir.

Q19 Sent out in the ordinary course of business? A. Yes, sir.

MR. TOULMIN: We would like to have this letter offered in evidence as our Exhibit Y-1.

MR. LYMAN: (After examining letter): I don't really see the pertinence of a letter from this gentleman to his counsel, Your Honor.

THE COURT: I don't know what it is. (After examining letter): Is there an objection?

MR. LYMAN: Not really. It is a self-serving document.

THE COURT: If there is no objection—

MR. TOULMIN: —We shall connect it up, Your Honor, in connection with some of the authorities in our Court of Appeals as to this, but I am using it now to refresh his memory.

The letter so offered in evidence, dated January 18, 1937, from The Williams Manufacturing Company by F. L. Williams to Toulmin & Toulmin, is made part of this record as **Defendant's Exhibit Y-1-A.**

By Mr. Toulmin:

Q20 Now, Mr. Williams, from and after the date of January 18, 1937, which is the date of this letter you have just identified, will you tell us whether or not, to your knowledge, the heel bands have had any clips on the back of them? A. They have not.

Q21 Is it your intention at any time to restore these clips?

MR. LYMAN: I object to that, Your Honor.

Testimony of Forrest L. Williams.

MR. TOULMIN: That comes within the authorities to which I shall call Your Honor's attention. We have a right to ask if there is any intention to restore. If there is no intention stated, it is a vital and material fact in connection with the testimony.

THE COURT: The witness may answer.

MR. LYMAN: Your Honor will note my exception?

THE COURT: Yes.

A. (After last question was read): It is not.

By Mr. Toulmin:

Q22 Is it your intention at any time to restore the wing screws that hold the heel band to the back attachment?

MR. LYMAN: I make the same objection. I suppose it will be the same ruling.

THE COURT: Yes; the objection shall be overruled.

MR. LYMAN: Exception.

A. It is not.

Q23 Now, Mr. Williams, do you know anything about when the so-called wing screws dropped out of the machines. A. Well, the first that I recall about it was when Mr. Toulmin was there—I use this in order to refresh my memory—as I recall, in the summer some time of 1936, he noticed that the screws were out and commented upon it, and that was the first time that it came to my attention that they were not being used. Then I do recall definitely when the men were there from United that that machine, nor did any of the machines have screws in them at that time. And I am very certain when Mr. Toulmin was there that he called it to the attention of all of us that there were no screws or wing screws in position in any of the four machines.

Q24 What caused you to cut off or have cut off the clips at the back of the heel bands, Mr. Williams? A. Advice of counsel in an endeavor to eliminate any controversy which that particular item might have brought about.

Q25 Had you been sued at that time? A. No, sir.

Q26 At this inspection a machine was exhibited to Messrs. Ryan and Condon, is that correct? A. Yes, sir.

Q27 Were you present at that inspection? A. I was.

Q28 Did you have anything to do with the selection of the particular machine that was exhibited to these gentlemen? A. I did.

Testimony of Forrest L. Williams.

Q29 Did you give any instructions as to which one of the four machines was to be brought? A. I instructed them to take the machine nearest to the elevator, the one which would be easiest to bring into the inspection room.

Q30 At the time of that inspection can you tell us whether or not this so-called hold-down clip or bar was on the machine or not, or did you notice the one adjacent the hole in the casting? A. I am certain it was on just the same as this clip or bar out here, because the same clip or bar was on all four machines.

Q31 Was any question raised by these gentlemen as to that at that time? A. Not to my knowledge.

Q32 Mr. Ryan has testified that the serial number on that machine at that time had been obliterated. Will you state whether or not that is correct? A. I am certain that that is not correct.

Q33 To your knowledge have any of the serial numbers ever been obliterated on any one of these machines? A. They have not.

Q34 Have you made any recent check of the two machines that are remaining at Portsmouth, to ascertain this fact? A. I saw them Sunday and they have not been.

Q35 Is a machine at Portsmouth, or one of those machines the same machine that was shown to these gentlemen? A. It is.

Q36 Did you examine the serial number indentations on that machine to see if it had been changed in any way? A. I did.

Q37 What did you find? A. They had not been changed.

MR. TOLMIN: If the court please, I desire to offer in evidence in conjunction with our Exhibit Y-1-A, which is the letter of Mr. Williams to myself, a letter I addressed to counsel for the plaintiff under date of January 21, 1937, the original of which they kindly produced this morning, in which the three principal paragraphs of this letter are quoted, as our Exhibit Y-1-B, in order that the court may have before it the record showing that, being advised this event had been accomplished of sawing off the clips at the back, that we so advised counsel prior to any suit being brought. If they will agree, we will have this copy which is attached to one of the pleadings in the case offered in evidence, instead of having the original from them for that purpose or having the reporter make a copy. It is immaterial except I notice in our office making the copy they got

Testimony of Forrest L. Williams.

January 20th instead of the 21st. Mr. Lyman's letter shows the 21st.

MR. LYMAN: There is no objection on the ground it is a copy, but I do object to its materiality in the case.

MR. TOULMIN: It comes within the authorities.

THE COURT: You may have an exception.

The copy of letter of January 21, 1937, from Mr. Toulmin to Mr. Lyman, so offered and admitted in evidence, is made part of this record as **Defendant's Exhibit Y-1-B.**

By Mr. Toulmin:

Q38 Since these changes were made, Mr. Williams, have you had any complaint that has come to you from the operators in the factory as to the operation of these machines? A. I have not.

Q39 Had you any complaint prior to the middle of 1936, when it was discovered these screws were off? A. No, sir.

Q40 Have you any records here produced as the result of the request of Mr. Lyman relative to the purchase of any additional wing screws in this connection? A. I have.

Q41 Will you please let me have those records, first stating whether the records came from the regular records of your company? A. They did.

Q42 Do these represent to the extent of your knowledge all the records on the subject? A. They do.

MR. TOULMIN: If the court please, we have here the original records. I have explained to Mr. Lyman our situation. They contain a great many other matters of confidence of our client that they don't want to exhibit to the other side. We are perfectly happy to have Mr. Lyman see them, however, and we will point out to him the parts that bear upon this particular part. But we don't want to have complete copies made of the documents or exhibit them to these commercial people.

THE COURT: May I suggest you dictate for the record what part of the exhibit you want?

MR. TOULMIN: Yes. Would you do that, Mr. Williams, because you can pick them out better than I can.

THE COURT: Has Mr. Lyman seen these?

MR. LYMAN: No.

MR. TOULMIN: Would you like to see these?

MR. LYMAN: I think you might let the witness state because I may not be able to make head or tail of it myself, and I desire to respect any confidential matters

Testimony of Forrest L. Williams.

there may be in those records. I don't intend to violate that.

A. The records were requested upon the nut 1108-B, of which 2 were shipped upon Moenus invoices of October 3, 1933, which was a list of parts which accompanied the original equipment. Then on March 28th, before Mr. Bender returned to Germany, he ordered additional parts. And on March 28th Moenus shipped to us 12 of these items. On October 21, 1935, at our request, they shipped us 12 additional nuts 1108-B. And the last ones were shipped at our request on December 3, 1935, by Moenus, a total of 4. In summary, there were 2 shipped on October 3, 1933; 12 on March 28, 1934; 12 on October 21, 1935; and 4 on December 3, 1935. Our files disclosed no additional parts of this serial number. I have checked the items with a red check mark.

MR. LYMAN: I don't want to take the time to look this over now, Your Honor. Perhaps I may do it at recess.

MR. TOULMIN: Mr. Williams will have them here.

MR. LYMAN: Yes.

By Mr. Toulmin:

Q43 Mr. Williams, do you know anything about the time when the so-called bight springs were removed from these four machines? A. Early in February of 1938, about a year ago.

Q44 Did you have anything to do with that? A. I did.

Q45 What did you have to do with it? A. I issued instructions that they be taken out after you had advised us to experiment to see if once taken out they worked satisfactorily, and we did find they worked satisfactorily and took the springs out.

Q46 Have they ever been restored? A. They have not.

Q47 Have you any intention of restoring them? A. No, sir.

MR. LYMAN: I object.

THE COURT: You may have an exception.

Q48 To whom did you give such instructions, if you please.

A. I gave them to Mr. Gialdini.

Q49 What position does he occupy in your plant?

A. I guess he would have the title of chief engineer, if we had titles.

Q50 Does he have anything to do with the production of the plant, or anything of that sort? A. Yes, from an engineering standpoint.

Testimony of Forrest L. Williams.

Q51 Why didn't you show all four of the machines to the United Shoe representatives in December, 1936, when they made this visit? A. We felt it advisable to show the machines to United in our experimental room. We knew that all machines were identical. We took one to this experimental room. As I recall, they asked if the machines were all identical and we told them yes, and we did not desire to take the United representatives into our plant proper.

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 Mr. Williams, in your affidavit filed in this case, speaking of these machines, you said: "All four machines were identical, per Moenus Catalogue No. 1224 and are so numbered." What catalogue did you refer to? A. I imagine that we referred to our regular catalogue which we have from Moenus, the big catalogue which represents the various machines that they offer.

XQ2 Have you that catalogue here? A. I have it at the hotel.

XQ3 I would like to see it some time during the day. A. I will be glad to let you do so.

MR. TOULMIN: We will bring it over at the noon recess, Mr. Lyman.

XQ4 Have you one of these wing screws that you can produce in court? A. I do not, no, sir.

XQ5 Where do the heel bands that you get come from? A. From Germany.

XQ6 Do they come with those clips sawed off? A. I understand that they do.

XQ7 You do not know about that personally? A. I do not know definitely.

XQ8 Your job as that of secretary doesn't put you in contact much with what goes on in the shop, does it? A. Not very careful contact except in matters of controversy.

XQ9 You are not an engineer at all? A. I am not.

XQ10 You are not a practical manufacturing man? A. I am not.

XQ11 How many spare cams come with those machines? A. One.

XQ12 That is the only spare cam that you have ever had? A. Yes, sir.

MR. LYMAN: That is all, Mr. Williams.

MR. TOULMIN: That is all. I desire the record to show that the spare cam is out here in the anteroom. We

Testimony of Forrest L. Williams.

will be glad to put it in evidence but it is our only spare. Counsel can look at it.

MR. LYMAN: I am afraid it would not do counsel very much good to look at it.

MR. TOULMIN: I share the same difficulty.

Thereupon Mr. Williams retired from the witness stand and

Bruno T. Gialdini,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 Mr. Gialdini, will you state your full name, please? A. Bruno T. Gialdini.

Q2 Your residence? A. Portsmouth, Ohio.

Q3 What is your occupation? A. Williams Manufacturing Company, in the engineering department.

Q4 Do you have anything to do with the shop in any way as to production of the machines? A. I do.

Q5 How long have you been with them? A. Since 1934.

Q6 Have you any familiarity by way of observation of the operation in seeing the heel seat lasting machines that are the subject of this law suit? A. I have.

MR. LYMAN: What is his position, please?

Q7 He is an engineer. They haven't any titles down there—production, engineering generally. Now will you tell us very briefly just what your duties are in the plant—just briefly? A. I am responsible for the development and design of special equipment, for time study, motion study, plant lay-out, and any other problems of an engineering nature that the management might assign to us.

Q8 Mr. Gialdini, did the question of whether there were any screws holding the back of the heel clamps on those machines ever come to your attention? A. It did.

Q9 Can you tell the court about when that was and how you can fix your memory on that subject? A. That was in the summer of 1936, when Mr. Williams took you up to the plant to see the operation of our heel seating machines, and during the lunch period—First you watched the machines in regular operation and

Testimony of Bruno T. Gialdini.

then during the lunch period or rest period you stopped the motor on one of the machines and examined it quite carefully. You looked beneath the machine where the heel band is and you stated there was no screw supporting the heel band. You showed me where there was a screw hole and where the heel clip through which the screw was attached to the machine was. Then we examined the other three machines and found there was no screw in either of the four machines in the plant. Then we questioned the foreman, who seemed to know nothing about it, and then we called our mechanic who at the time, I believe, was Steve Schnabl, who was on duty at the time, and he explained that the screws had started falling off since shortly after the machine had been installed and that he was making no attempt to keep them on the machine.

Q10 Had you had any complaint prior to that time as to the operation of those machines? A. I did not.

Q11 If there had been any complaint would it have come to your attention? A. It would have.

Q12 Did you have any complaint about the operation of the machines subsequent to that time? A. I have not.

Q13 Do you recall the occasion of an inspection by Messrs. Ryan and Condon? A. I do.

Q14 Of one of these machines? A. I do.

Q15 Who selected the machine to put in the inspection room? A. I don't know that anybody selected a machine.

Q16 Just tell your part in getting that machine. A. Mr. Williams asked me to have one of the heel seat lasters delivered to the experimental room and I issued instructions, either to Mr. Schnabl or Mr. Handley, to have the machine delivered to the experimental room and to have it connected to power and to provide lights so it could be examined carefully.

Q17 Was it in condition to be operated in that room? A. It was.

Q18 Did you have shoes there so they could operate it? A. They had shoes.

Q19 Can you tell the court whether it was operated? A. I believe we operated it on some shoes and Mr. Ryan showed us how to carefully adjust the machine in order to get the best results from the machine. We had a full range of sizes of shoes; if I remember right, we had from the largest to the smallest size.

Testimony of Bruno T. Gialdini.

Q20 Were you told by anyone in connection with the management, or anyone else, which machine to select of these four? A. I was not.

Q21 After that inspection what was done with the machine? A. It was taken back to the plant either that same afternoon or the following Sunday and placed in operation.

Q22 That machine has a serial number on it, does it not? A. It does.

Q23 How recently have you inspected that machine? A. I inspected that machine Saturday, this last Saturday, and I inspected it again yesterday afternoon before coming back here.

Q24 Did you have any obliteration of the serial number on that machine? A. I did not.

Q25 To your knowledge has that serial number ever been touched? A. To my knowledge it has not.

Q26 Has the serial number on any of these machines ever been touched? A. They have not.

Q27 Did you have anything to do with the sawing off of the clips at the back of the heel bands, or chopping them off? A. I issued instructions to Mr. Schnabl to have them sawed off.

Q28 Have you any idea about when that was? A. That was following the inspection of the machine by the United representatives. It was either the late fall of 1936 or the first of 1937.

Q29 Have these heel bands been used with clips on the back of them since that date? A. They have not.

Q30 Have any of the heel bands been used with screws and clips since the summer of 1936? A. They have not been used with the screw or the clip which you have been referring to.

Q31 Do you recall the removal of the bight springs from these machines? A. I do.

Q32 Can you tell us about when that was? A. That was about a year ago.

Q33 Have you any way of fixing your memory on the exact date? A. No, I haven't.

Q34 I hand you a letter which may refresh your memory, under date of February 9, 1938, and ask you if you are the person who signed that letter? A. (After examining letter): I am.

Q35 Will you tell us whether or not that letter was sent out in the ordinary course of business? A. It was.

Q36 To whom is it addressed? A. To Toulmin & Toulmin.

Testimony of Bruno T. Gialdini.

Q37 That is myself? A. Yes.

MR. LYMAN (After examining letter): I don't think that is admissible, Your Honor, a letter that the witness has written.

MR. TOULMIN: It enables him to fix the date. We offer it for the same purpose we offered Exhibit Y-1-A, as fixing the date when the transaction occurred.

THE COURT: Of course, this wouldn't be considered the best evidence.

MR. TOULMIN: He has already testified.

THE COURT: I understand. The objection will be sustained.

MR. TOULMIN: Exception, Your Honor. I will have this marked for identification.

THE COURT: For the purpose, you say, of refreshing his recollection.

MR. TOULMIN: That is the only purpose.

The original letter of February 9, 1938, from B. T. Gialdini, The Williams Manufacturing Co. to Toulmin & Toulmin was thereupon marked for the purpose of identification Defendant's Exhibit Z-1.

MR. TOULMIN: He has already testified to the fact it makes no difference as a matter of principle in this case.

By Mr. Toulmin:

Q38 Mr. Gialdini, you have heard the discussion here about the hold-down strap on the side of the machine where that spring is. A. I have.

Q39 Will you tell the court whether or not that construction appears on the other three machines? A. It does.

Q40 Have there ever been any changes in those machines, to your knowledge, since the first day you saw them? A. Not to my knowledge.

Q41 There has been no change? A. No, sir.

Q42 Did you take any photograph over the weekend of the serial number on Number 4 machine that these gentlemen saw? A. I did.

Q43 May I have it, please? (After witness handed photograph to counsel): Were you present when this photograph was taken? A. I was.

Q44 Did you take any other photographs of a machine down there? A. I did.

Q45 Which machine is that? A. That machine is Number 1.

Testimony of Bruno T. Gialdini.

Q46 What is this photograph I hand you? A. Photograph showing the gear guard just above the spring end bar.

Q47 Were you present when these photographs were taken. A. I was.

Counsel for defendant thereupon offered in evidence the two photographs so identified by the witness, and the same are made part of this record, marked respectively, **Defendant's Exhibits A-2 and B-2.**

Q48 Mr. Gialdini, I hand you two more photographs and ask you if you can tell about when they were taken? A. They were taken about a year ago.

Q49 Were you present when they were taken? A. I was.

Q50 Do they show a serial number? A. They show a serial number and show the machine is our Number 4.

Counsel for defendant thereupon offered in evidence the two photographs so identified by the witness, and the same are made part of this record, marked **Defendant's Exhibits C-2 and D-2.**

Q51 Mr. Gialdini, did you notice any difference in production, or did you have any complaints about the productive capacity or quantity of the shoes made on the Moenus machines after the bight springs were taken out as compared with before they were taken out? A. I did not.

THE COURT: Do you think at this time it would be well to have the witness describe the type and quality of shoes they make?

Q52 Yes. Do you have some samples of your shoes here? A. I don't know whether they are here or at the hotel. We do have.

Q53 I hand you four partially completed shoes and will ask you to state of whose manufacture they are. A. They are ours. They are manufactured by the Williams Manufacturing Company, or in the course of manufacture by the Williams Manufacturing Company. We have one that has the heel seat which has not been tacked—

MR. LYMAN: —Why don't you identify them.

A. This one here has been heel seat tacked. These would be identical in the course of operation.

Q54 The fifth one has been heel seat tacked? A. Yes, sir.

Téstimony of Bruno T. Gialdini.

THE COURT: Let us see the one that has been.
(Thereupon the court examined the shoe referred to.)

Counsel for defendant thereupon offered in evidence the five partially completed shoes referred to by the witness, and the same are made part of this record as **Defendant's Exhibits E-2-a, E-2-b, E-2-c, E-2-d and E-2-e.**

Q55 Whose manufacture is this shoe, Mr. Gialdini (handing another shoe to witness)? A. Williams Manufacturing Company.

MR. TOULMIN: We offer this in evidence because it is a lasted shoe like one of the unlasted, one of the untacked ones.

The shoe so offered in evidence is made part of this record as **Defendant's Exhibit E-2-f.**

By Mr. Toulmin:

Q56 Do you know, Mr. Gialdini, what price the shoes that you manufacture sell at at retail? A. Around two dollars.

Q57 Will you look at those shoes and tell us whether they accurately represent the stage of process of manufacture in your plant that you customarily employ? A. Will you repeat the question, please?

Q58 Do those shoes correctly represent shoes taken off of your production line? A. They do.

Q59 That includes the one in His Honor's hand? A. It does.

Q60 Would you say these are typical examples of the shoes in the stages of manufacture they happen to be? A. They are.

Q61 In your plant are you manufacturing what is known as a high class shoe, or a quantity production low grade shoe? A. Quantity production standard low grade shoes.

Q62 When were these particular shoes manufactured? Do you know? A. They were manufactured—

Q63 —I don't mean to the day. A. They were manufactured late last week.

Q64 Were they specially selected for any purpose? A. They were taken off of the production line to be shown here.

MR. TOULMIN: I think, Your Honor, that covers what I have in mind identifying our shoes.

Testimony of Bruno T. Gialdini.

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 Perhaps you can answer, Mr. Gialdini, the question that I asked Mr. Williams and which he was unable to answer, as to whether, when you buy new heel bands, they come with the clip on them or not. A. According to the testimony that was given last week they come without the heel clips.

XQ2 I am asking you. A. I didn't know that they came without the heel clips.

XQ3 You don't know whether they do or not? A. I do not.

XQ4 The testimony was they came with the heel clips on but sawed off. A. That is right.

XQ5 Which is a strange event, but you don't know about that? A. I do not.

XQ6 These four photographs which you produced, marked respectively, A-2, B-2, C-2 and D-2, all show views of the same machine, do they? A. A-2 and B-2 are different machines. A-2 and C-2 are the Number 4 machine, our Number 4 machine. B-2 and D-2 may refer to a note, B-2, which is serial number 86680 of our Number 1 machine in Portsmouth; D-2, which is 86679, which is of the Number 4 machine in Portsmouth.

XQ7 I think you will have to tell me again, which of these photographs illustrates which machine. Will you state that again? Give the numbers. A. B-2 and A-2 illustrate the two machines that are now in Portsmouth.

XQ8 Which one represents which machine? A. B-2 represents the Number 1 machine, 86680; A-2 represents the Number 4 machine which is now in Portsmouth. These are the two photographs which were taken last Saturday morning. D-2 represents machine Number 86679, which was taken about a year ago.

XQ9 What is the number of the C-2 machine? A. Number 4.

XQ10 What is the number of the Exhibit D-2 machine? A. Exhibit D-2 machine is our Number 4 machine, which is also in Portsmouth.

XQ11 The same machine shown in the photograph A-2, is it? A. That is right. And C-2 also is a front view of the Number 4 machine. There is one there that represents the Number 1 machine.

XQ12 Exhibit B-2 represents Number 1 machine. A. Number 1 machine.

Testimony of Bruno T. Gialdini.

XQ13 A-2 and D-2 represent the Number 4 machine.
A. Number 4 machine.

XQ14 What is the number of the machine that is in the court house here? I don't mean the serial number.
A. Number 2 machine.

XQ15 Number 2 machine. And the Number 3 machine is the one that is at Minster, is it? A. The Number 3 machine is in Minster.

XQ16 And which do you say is the machine that was shown to Mr. Ryan and Mr. Condon? A. I did not know until the testimony was given here that it was Number 4 machine.

XQ17 So you don't know of your own knowledge which machine was shown to them? A. No, I made no record of the machine we showed them. I knew they were the same—one of the four machines.

XQ18 How were these figures 1, 2, 3 and 4 applied to these machines? A. On the original set-up in our lasting room the machines were across the room, Number 1, 2, 3, 4, and I believe the numbers were placed on so the mechanics would know what machine to go to when they were called.

XQ19 How were the numbers put on? A. They were painted on.

XQ20 Have those numbers been changed at all? A. They have not.

XQ21 I suppose the cards that are shown in these photographs, Mr. Gialdini, which bear the number "1224" and then the following serial number, are simply cards you put in so you could show which machine was being photographed. A. That is right, because the serial number was on the opposite side of the machine and I wanted to show that this bar was on this particular machine.

MR. LYMAN: That is all.

Thereupon Mr. Gialdini retired from the stand and

Stephen Schnabl,

recalled as a witness on behalf of defendant, having been first duly sworn, testified further as follows:

By Mr. Toulmin:

Q93 Steve, I understand that you want to make a correction in one or two of the statements that you

Testimony of Stephen Schnabl (Recalled).

made, or dates. Will you please tell the court what corrections you wish to make in your testimony?

A. I would like to make three corrections. I was testifying entirely from memory and I hadn't seen any records whatever. I made a statement that to my knowledge the last screws were ordered in 1934. The invoices show that the last screws were purchased in 1935. Then I made a mistake when I heard about the date of having become a citizen of the United States. I made the statement that I was made a citizen of the United States in 1928. When I came home I looked it up and I made my citizenship the 27th day of September, 1929.

Q94 Have you got any other change you want to make? A. I made another statement that according to my recollection it was about six months ago that those springs had been taken out.

Q95 What springs do you mean? A. Those little springs at the back, and here I found out through correspondence that the springs had really been taken out a year ago.

Q96 Did you look at any records before you came here to testify? A. No, sir.

CROSS-EXAMINATION

By Mr. Lyman:

XQ174 Which of the four machines was it that was shown to Mr. Ryan at that time? A. Which of the four?

XQ175 Yes. A. I believe it was the Number 4.

XQ176 You say you know it was Number 4? A. We have not made any record of any kind. I presume it was Number 4.

XQ177 You presume so? A. What does "presume" mean?

XQ178 I am asking you. A. I believe. Would that be correct?

XQ179 If you don't know, I believe the answer would be "I don't know." A. I am not positive but I believe it was Number 4 because I have heard it mentioned so often.

XQ180 I think that is all. Let me see your citizenship papers. A. (Handing papers to counsel): You see, I had to be in the United States five years and ninety days before I could file any intention for second papers.

MR. LYMAN: That is all.

Thereupon Mr. Schnabl retired from the stand and

Frank A. Handley,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 What is your full name, Mr. Handley? A. Frank A. Handley.

Q2 What is your position? A. Superintendent of Maintenance, Williams Manufacturing Company.

Q3 Where do you live? A. Portsmouth, Ohio.

Q4 How long have you been with the company? A. Ever since they started business.

Q5 As superintendent of maintenance of the company what do you have to do with the machinery? A. Well, I don't practically have much to do with it only moving it to the places wherever they desire it.

Q6 Did you ever have anything to do with the heel seat tackers that are the subject of this present lawsuit? A. I don't understand what you mean by having anything to do with them.

Q7 When did you first see the heel seat tackers that we are talking about here in this lawsuit? A. I saw them in Portsmouth.

Q8 Do you remember about when that was? A. Well, it was in 1933, the last of 1933 we got our first in.

Q9 Did you get any after that time? A. Yes, we got one in 1934.

Q10 Who was here from the company in Germany to set up the machines? A. Mr. Bender.

Q11 Did you aid or assist Mr. Bender in any way in connection with setting up these machines? A. Yes. He was turned over to me to take care of him around the factory there and I was with him when he uncrated them and assembled them.

Q12 Do you know what we mean by the side strap connected with the hold-down? A. Yes, sir.

Q13 Will you please tell the court when you became familiar with that member? A. It was not there when it came. Mr. Bender made them.

Q14 What did he make? A. Just a strap of strap iron, and held on with a screw.

Q15 Was that put on one or all four? A. On all four.

Q16 How did he get the strap iron mounted on the machine, and what holds it on? A. A screw.

Q17 At one or both ends? A. One end.

Q18 With that strap in position—was that strap placed in position when the machines were first set up

Testimony of Frank A. Handley.

or at some later time? A. When he first assembled them he put it on.

Q19 Have those straps ever been changed, to your knowledge? A. No, sir.

Q20 Have any new straps been put on? A. No, sir.

Q21 Have any adjustments been made on those straps, do you know? A. Not to my knowledge.

Q22 Do you know whether or not these machines have any serial numbers on them? A. They have.

Q23 Do you know whether those serial numbers have ever been changed? A. They have not to my knowledge.

Q24 Would they have come to your attention if they had been changed? A. Yes, sir.

Q25 Do you know anything about the wing nuts dropping off the heel bands at the back of the machines? A. I knew the boys had trouble with them but I wasn't with them enough to know much about it. I knew they were dropping off.

Q26 That is all you know about it? A. That is all.

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 You are superintendent of maintenance? A. Yes, sir.

XQ2 What do you have to do with these particular machines, these heel seat lasters of the Moenus type? A. Well, I have all of the maintenance boys under me.

XQ3 Do you ever do anything with the machines yourself? A. No, sir.

XQ4 You wouldn't know whether there had been any change in those stops that you are speaking of, those stop rods, would you? A. I said I didn't know to the best of my knowledge that any changes had been made.

XQ5 Your knowledge would not be sufficient that you would know anyway, would it? A. I think so.

XQ6 Why? Why would that come to your attention? A. I don't know as it would come to my attention but I could tell by looking at them that they were the same as they were when he put them on.

MR. LYMAN: That is all.

MR. TOULMIN: That is all, Mr. Handley.

Thereupon Mr. Handley retired from the stand and

Frank Cooper,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 What is your name? A. Frank Cooper.

Q2 Where do you live? A. Portsmouth, Ohio.

Q3 What do you do for a living? A. Work at the Williams Manufacturing Company.

Q4 What kind of work do you do there? A. I am a heel seat fast operator, machine operator.

Q5 What kind of a machine do you operate? What is the name of the machine? A. Moenus.

Q6 A machine like that out in the hall that you saw this morning when you came in? A. Yes, sir. That is the machine I have been running.

Q7 That is your machine? A. Yes, sir.

Q8 Have you run any other machines in the plant like that? A. Yes, sir, I have run all of them.

Q9 How many are there? A. There are three there at the present time.

Q10 How many were there? A. Four.

Q11 When did you first go with the company to do this kind of work? A. I would say about five years ago.

Q12 Did you have anything to do with the uncrating and setting up of these machines? A. No, sir.

Q13 How soon after the machines got in about five years ago did you start to operate them? A. They tried me out on the first machine.

Q14 You have been operating them ever since; is that right? A. Yes, sir.

Q15 Do you know what the heel band is in the machine? A. Yes, sir.

Q16 I wish you would tell the court what experience you had with the attachment of the heel band at the back of it with the wing nuts. Just tell the whole story. A. Well, we had a terrible lot of trouble with the wing nuts when they first came in, and they kept falling off and we did not seem to be able to keep them on, and the wing nut on my machine was really off as much as it was on, so finally, after about a year or two years, they just left them off altogether.

Q17 Is there any difference in the operation of the machine with or without them? A. I don't see that there is.

Q18 After the first, say, couple of years of these nuts falling off and were left off were they ever put back on again? A. No.

Testimony of Frank Cooper.

Q19 Is there any advantage or disadvantage in not having the wing nuts on the back? A. It is an advantage inasmuch as we use two heel leather pads and we change from white shoes to black shoes and you can make the change much quicker without the nuts.

Q20 Do you notice any difference in the operation of your machine during the last year as compared to previous years? A. No, I don't.

Q21 Do you know of any change that has been made in that machine other than the heel clip falling off, this wing nut? A. No, sir.

Q22 Do you know of any change being made on that side strap on the hold-down at any time? A. No, I do not.

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 Who have you talked with about the testimony you were going to give here today? A. Mr. Toulmin.

XQ2 Go ahead and tell us if there is anybody else. A. Nobody else.

XQ3 When did you talk to him? A. Talked to him last Saturday.

XQ4 For the first time? A. Yes, sir.

XQ5 Isn't it true that after the screws were taken off from those machines about December, 1936, that you demanded that they be restored to your machine? A. No, sir.

XQ6 You are sure of that? A. Yes, sir.

XQ7 They were restored to your machine, weren't they? A. No, sir.

XQ8 Never had the screws back after they were taken off originally in 1936? A. No, sir.

MR. LYMAN: That is all.

MR. TOLMIN: That is all.

Thereupon Mr. Cooper retired from the witness stand and

Edward L. Cronin,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 State your full name. A. Edward L. Cronin.

Q2 Where do you work? A. Williams Manufacturing Company.

Testimony of Edward L. Cronin.

Q3 Portsmouth? A. Yes, sir.

Q4 Is that where you live? A. Yes, sir.

Q5 How long have you been with the company?

A. About six years.

Q6 What do you do with them? A. Operate a heel seat tacker.

Q7 Like this one out here in the hall? A. That one; that same machine.

Q8 You take turns on operating that machine with Cooper, who just left the stand? A. Yes, sir.

Q9 What do you run, two shifts? A. Yes, sir.

Q10 How long have you been running heel seat tackers of that sort? A. I guess about five years.

Q11 Do you know what the heel band is on that machine? A. Yes, sir.

Q12 Do you know what we are referring to when we talk about this wing nut in the back of the band? A. Yes, sir.

Q13 Tell the court your experience with that nut staying on there or falling off and how long it stayed on and everything about it. A. Well, it would drop off every once in a while and fall into the machine, and we couldn't get it—you would have to get down and get your hands dirty, and we would have to put it back, and working on white shoes you would get them dirty. We didn't pay much attention to it. I mean if one dropped down we would get another one and put it on.

Q14 How long have you been operating these heel seat tackers? A. Five years.

Q15 Which one did you start on, do you recall, as the first one you operated? A. I operated the second machine that was set up.

Q16 How long did these screws at the back of the heel band stay on, to your recollection? A. Not more than two years I don't think we used them.

Q17 How do you fix that period of time? Have you any way of fixing it? A. No definite way.

Q18 Are you operating them now with the back of the band attached in any way? A. No.

Q19 Did you ever complain about the heel band not being attached to the back? A. No, sir.

Q20 Why didn't you, if it fell off? Does it make any difference in the operation of the machine? A. No. I liked it better with it off.

Q21 Why did you like it better? A. As Cooper mentioned, changing the band was much easier. It takes about one-fourth of the time to make the change.

Testimony of Edward L. Cronin.

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 Who have you talked over your testimony with?

A. With Mr. Toulmin.

XQ2 When did you talk with him? A. Saturday.

XQ3 The first time you ever talked to him about this?

A. The first time I ever talked to him.

MR. LYMAN: That is all, Your Honor.

Thereupon Mr. Cronin retired from the stand and

Bruno Kath,

called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 Will you state your full name? A. Bruno Kath.

Q2 Where do you live, Mr. Kath? A. Frankfurt, on Main, Germany.

Q3 What is your occupation? A. I am a mechanical engineer engaged on patent work for my company.

Q4 How long have you been with the Moenus Company?

MR. LYMAN: You have not asked him if he was connected with the Moenus.

MR. TOULMIN: I thought he said so.

MR. LYMAN: I don't think so.

By Mr. Toulmin:

Q5 With what company are you connected? A. The Maschinenfabrik Moenus A. G.

Q6 How long have you been with that company? A. Since January, 1932.

Q7 And were you with any company manufacturing shoe machinery prior to that time? A. Yes, sir.

Q8 What company? A. I have been at Leipzig, Germany, with the Atlas Works.

Q9 What year did you say you came with Moenus? A. 1932.

Q10 Have you made any study of shoe machinery patents? Yes, that is my duty with my firm.

Q11 Have you made any particular study of the so-called first McFeely patent? A. Yes, sir.

Q12 Number 1,129,881? A. Yes, I did.

Testimony of Bruno Kath.

Q13 Have you made a study of the McFeely patent in suit 1,558,737? A. Yes.

Q14 And have you made a study of the Hoyt patent 1,508,394? A. I have.

Q15 Have you made a careful study of the Model A machine of the plaintiff out here in the anteroom? A. I have.

Q16 Did you make a study of the Model D of the plaintiff out in the anteroom? A. I have, also.

Q17 Have you made any study of the Pym patent 1,368,968? A. Yes.

Q18 Now, Mr. Kath, there has been some discussion here as to bed lasters. Are you familiar with bed lasters? A. To a certain extent I am; to a great extent I am.

Q19 Does your company make bed lasters? A. Yes, sir.

Q20 What is the difference, generally speaking, between a bed laster and a heel seat tacker? A. A heel seat tacker really is a bed laster because as a bed laster we refer to any machine that does lasting by means of wipers that go over the shoe and break the margin of the upper and lay it over the insole. And a heel seat tacker is a machine, really a bed laster with tackers applied to it.

Q21 What sort of machine does the Pym patent represent? Have you got a copy of that patent before you? A. No.

Q22 I will hand you a copy. Does this represent a bed laster (handing document to witness)? A. Yes, sir, it does.

Q23 Is that machine hand operated or automatic or semi-automatic? A. I should call it semi-automatic. It has got hand adjustments and cams to work the instrumentalities.

MR. TOULMIN: If the court pleases, that is the patent we were sued upon.

THE COURT: Oh, yes; I know what it is.

By Mr. Toulmin:

Q24 Now, Mr. Kath, have you compared the Model A machine of the plaintiff here, which is Plaintiff's Exhibit Number 4, with the first McFeely patent, 1,129,881? A. I have.

Q25 Will you please tell the court what principal features of this McFeely patent you found embodied in this Model A machine, Exhibit Number 4.

Testimony of Bruno Kath.

MR. LYMAN: I don't know, Your Honor, whether it is the practice of this court to have two expert witnesses go over the same ground.

MR. TOULMIN: This man is not going over the same ground.

MR. LYMAN: I think this was the same subject we listened to at great length with the professor.

THE COURT: I don't know if this is just preliminary to something or not.

MR. TOULMIN: I will tell Your Honor, if you want.

THE COURT: Do you want to make a statement now?

MR. TOULMIN: Yes, Your Honor, I think I will make a statement now. I want to have Mr. Kath, who is a shoe machinery engineer—Dr. Greene is not a shoe machinery engineer—testify as they have had various engineers testify that the Model A is in substance the first McFeely patent, because I want to use that proof to show whatever commercial success there was in Model A and later in Model D was due to the first McFeely patent as contrasted with the second McFeely patent, and I wish to show as to Model D it embodied many of the first McFeely features plus the Jorgensen features. That is necessary and vital to our case. We want this engineer to so testify.

MR. LYMAN: The subject-matter has been gone into already, Your Honor, by the other witness.

MR. TOULMIN: No, I did not.

MR. LYMAN: We may get into a very long cross-examination if we go into all these things.

THE COURT: If it is necessary I don't see that we can avoid it. It might be regarded as serious error to shut off this examination, so in order to avoid that we will permit it. You may have an exception.

MR. TOULMIN: I don't think it will be so long.

THE COURT: All right.

By Mr. Toulmin:

Q26 Now, Mr. Kath, will you summarize for the court and ourselves the features of the Model A machine, Exhibit 4 of the plaintiff, which you found in the first McFeely patent? A. I will put it this way. I found that the Model A machine is in substance covered by the McFeely patent Number 1 but there are some differences, some substantial differences. One feature applies to the heel band which is in the Model A attached at the back, while in the McFeely patent Number 1 it is not. Then I found a difference in the hold-down member which, ac-

Testimony of Bruno Kath.

according to the McFeely patent, is not adjustable in its amount of movement.

THE COURT: I think we could follow a little closer if you will just refer to the earlier one as the first McFeely patent and the Model A as the second McFeely. You want to distinguish the characteristics of the later McFeely over the early one.

MR. TOULMIN: No, Your Honor. I want to show that the first McFeely patent is embodied in their Exhibit 4, their Model A machine, and he was endeavoring to shorten this thing by arguing everything in the first McFeely was in that Model A except certain things he was going to call attention to that were not there. Let me start again, Your Honor. It is difficult for him sometimes to understand.

By Mr. Toulmin:

Q27 I want you to take the Exhibit 4 machine, the Model A. You understand what that is. A. Yes, I do.

Q28 And compare the principal features of that with the first McFeely patent, 1,129,881, and point out the similarities between those two machines in their essential features, if there are any. A. Yes. Starting with the jack, it is a tipping-in jack, which is the same, is a similar feature.

THE COURT: Raise your voice.

A. The jack is the same, substantially the same as in the McFeely patent. It is tipping in and is raised into contact with the hood. The heel band is substantially the same except that it is attached by means of a clip at the back. The machine has got a back stop which can be moved forward and backward. Then as another feature we have the wipers and the tackers which are movable relative to each other, also as they are in the first McFeely patent. Then the hold-down which comes into contact with the bottom of the last of the shoe, which is movable up and down but not adjustable in its amount of movement. Then the tacking device—I mean the tacks are applied the same, or substantially the same, and the operation of the heel band and of the jack are derived from the same cam. The jack receives an in-draw movement and an out-draw movement, which means the jack is drawn into the heel band and it is also drawn up against the stop, against the hood. The machine has got two treadles. In the McFeely patent it has only got one, in the early McFeely.

Testimony of Bruno Kath.

Q29 Now confine yourself to the similarities for the moment. I will come to the differences later. A. I think that is practically all.

Q30 All right. Now tell the court what differences you find in the Model A, Exhibit 4, machine and the first McFeely patent 1,129,881. I mean the essential differences. A. Yes. I have pointed out already the heel band which is attached by means of a clip at the back. Then the second difference is the stop for the—or put it this way—is the means for adjusting the lift of the hold-down, which is not in the McFeely patent.

Q31 What is that means for? Upwiping? A. I think it is for upwiping, yes, and for positioning the shoe.

Q32 What else do you find? A. I find that the Model A has two cams for operating the jack. The McFeely patent has only got one.

THE COURT: I will tell you—You see, the Model A represents the first McFeely patent, doesn't it, out there?

MR. TOULMIN: No, Your Honor; it is supposed to represent the McFeely patent in suit.

THE COURT: Then the original McFeely is not here, is that it?

MR. TOULMIN: No, sir.

MR. LYMAN: The original McFeely was never built, Your Honor.

THE COURT: The second one out there is an improvement over the Model A.

MR. LYMAN: That is the present form in which this invention is manufactured and marketed. The old McFeely patent this witness is talking about, 1,129,881, is the patent which I said was impractical and never used, and the patent in suit purports to improve upon that patent in certain respects, and the Model A which we have had here is the literal embodiment and the first embodiment of this patent in suit. The Model D is the form including some modifications.

THE COURT: It is the latest.

MR. TOULMIN: That is the latest thing. That is the reason why it is essential for me to bring out the first one is embodied in that machine. That is the only one we have got.

MR. LYMAN: He is comparing the Model A.

THE COURT: He is comparing the Model A with the original McFeely, of which we have no model.

MR. TOULMIN: That is right.

MR. LYMAN: That is right.

THE COURT: I was having difficulty in following.

Testimony of Bruno Kath.

MR. TOULMIN: It is helpful to have that comparison.

By Mr. Toulmin:

Q33 Had you completed that? A. No. I think I have to mention that to my mind this machine also has upwiping.

Q34 Is that upwiping found in the first McFeely patent? A. No.

Q35 Go ahead. A. No. I could not see much movement in the upwiping, what I consider to be upwiping, because the stop or the bar which extends from the cam lever to the front of the machine has been drawn up already far enough from the cam so the cam roller hardly touches the cam, so there won't be much movement, and consequently it is very difficult to see. But I think it has upwiping.

Q36 You have summarized the principal features in which the Model A machine is like the first McFeely patent 1,129,881, have you not? A. I have.

Q37 And you have also called the court's attention to the differences that exist between that first patent and the Model A machine, is that right? A. I have.

Q38 Will you compare the Model D machine, which is Plaintiff's Exhibit Number 7, with the first McFeely patent, as to what features the Model D machine embodies of the first McFeely patent? A. Model D machine has what is practically the same elements as the Model A machine except that it has its tackers and wipers arranged according to the Jorgensen patent. That means the tackers and wipers are—

THE COURT: —That is, where you tack through.

A. Yes, are made to tack through the wipers and are positioned vertically. And the tack supply and distribution is different.

Q39 Is this the patent you are referring to? I hand you the Jorgensen patent 1,852,015, of April 5, 1932, filed April 16, 1929, and marked Defendant's Exhibit A for identification. A. Yes, this is the patent I refer to.

Q40 How does the mechanism shown in the drawings of that patent compare with the mechanism of the Model D, Exhibit 7, machine of the plaintiff? A. As far as I can see it is the same.

MR. TOULMIN: We offer this patent in evidence as our Exhibit A.

MR. LYMAN: I object to it as immaterial, Your Honor. As I explained the other day, it is just a patent

Testimony of Bruno Kath.

that shows the details of construction, this matter of getting the tacker to hit the nail head on a slanting direction.

THE COURT: How does it become relevant?

MR. TOULMIN: It becomes very important, Your Honor—I shall have authorities to show you as a matter of law, in addition to facts,—it becomes important to show this commercial success was due to two things: First, that the fundamental features were in the first McFeely machine, and that the improvements on the Model D machines were of a later patent and not of the patent in suit to McFeely.

THE COURT: That goes to the commercial success of McFeely arrived at before 1932.

MR. TOULMIN: No, Your Honor, that patent was filed in April, 1929. They evidently had the construction prior to that time because they embody it in the machine. They say they supplied the Model D from quite a period prior to 1929. They only made twelve of the Model A, so that construction must have been embodied in a machine long before that time. We have deemed that vital to the defense on that subject.

THE COURT: I don't know. I think that is going too far. The objection will be sustained unless you can establish your right by authorities.

MR. TOULMIN: If Your Honor will suspend it on that basis I will produce the authorities for you.

THE COURT: Of course, we have been in the trial of this case now some few days and it is hard to keep constantly in mind the accumulation of testimony, but it seems to me that the evidence was that the Model A machine, Exhibit 4, out there has been manufactured for some years prior to the time that was filed.

MR. TOULMIN: We are not claiming this is Model A; we are claiming this is the Model D.

THE COURT: I understand, but the other model out there now, Exhibit 7, is of course the latest model of the McFeely machine, but it embodies all the earlier McFeely patent plus the newer McFeely features; is that right?

MR. LYMAN: That is right.

MR. TOULMIN: That is correct.

THE COURT: If McFeely was being successfully used and sold—some twelve hundred were sold; is that right?

MR. LYMAN: Those figures are the numbers that are now outstanding.

Testimony of Bruno Kath.

MR. TOULMIN: Only twelve were sold of the first McFeely.

MR. LYMAN: The figures given are the models now—the machines now in use, are 1250. There have been successive models beginning with the Model A, which was exactly like the patent, and then this and that minor change, culminating with the Model D which we have here.

MR. TOULMIN: May I make a suggestion, Your Honor?

THE COURT: Yes.

MR. TOULMIN: It is very easy for us patent lawyers to make this thing difficult. May I suggest we suspend your ruling on this until we produce authorities on this, and make up your mind whether we are wrong or right on it, because I have completed the testimony on it.

THE COURT: All right. May I suggest this to counsel. It seems to me now—I may be wrong, but it seems to me, without going back over the notes, that there is evidence in the record showing the success of the McFeely patent prior to 1929, the date of application of the Jorgensen patent.

MR. LYMAN: There is.

THE COURT: And your purpose here is to show the commercial success of the McFeely patent followed the adoption of the Jorgensen patent; is that right?

MR. TOULMIN: No. My purpose is to show that the commercial success of the Model D machine was due to the Jorgensen patent in part and not to the McFeely patent in suit exclusively, because these features are essential commercial features, and they have shown it by adopting them.

THE COURT: We are getting away, then, from the real issues in this case, which is a question of infringement of the McFeely patent.

MR. TOULMIN: I agree with Your Honor. I objected to Model D in the beginning for that reason, but I was overruled and I must put in this proof to protect my client on account of that state of the record. I am in thorough agreement on that.

MR. LYMAN: If Mr. Toulmin is not going to take up any more time on that, Your Honor, in order to avoid delay I am willing to withdraw by objection to the putting in of that Jorgensen patent and the evidence and let it go in for what it is worth, if it isn't going to take any more time. He said he has finished.

MR. TOULMIN: I have no intention of taking any more time, but I am not afraid of it.

T testimony of Bruno Kath.

The Jorgensen patent so offered in evidence, No. 1,852,015 of April 5, 1932, is made part of this record as **Defendant's Exhibit A.**

At this point a short recess was taken, after which Mr. Kath resumed the stand.

MR. TOULMIN: You may have the witness, Mr. Lyman.

THE COURT: I was wondering, Mr. Toulmin,—it might be considered as improper and not acceptable—whether or not through this witness the defense is willing to stipulate whether or not there are any improvements in the second McFeely patent that were not in the first McFeely patent.

MR. TOULMIN: He has already testified, Your Honor, that there is upwiping in the second, which is not in the first.

MR. LYMAN: Your Honor, we have already brought out in our testimony what those improvements were.

THE COURT: I understand. I just thought—

MR. TOULMIN: —I asked him that question to bring that out.

THE COURT: I know you did—but just by way of stipulation.

MR. TOULMIN: I will be very glad to state right now that the only difference that we find between the two that is material, first, is the difference that one has upwiping and the other hasn't, that is, the second has upwiping and the first doesn't, and in the first there is no attachment between the back of the hold-down and this pusher and in the second there is.

MR. LYMAN: Your Honor, since Mr. Toulmin takes that position, we can't expect any stipulation on that point. We shall have to rely on the evidence, because while there are specific differences they are very far from the principle, so we can't stipulate on that.

CROSS-EXAMINATION

By Mr. Lyman:

XQ1 When did you come to this country, Mr. Kath?

A. On the 29th of December, 1938.

XQ2 You came for the purpose of preparing for testifying in this case, did you? A. Generally speaking, yes.

XQ3 And you have been cooperating with Mr. Toulmin in getting ready for the trial? A. Yes, I told Mr. Toulmin what I knew about these machines.

Testimony of Bruno Kath.

XQ4 You have been working on these drawings and sketches and various exhibits that were introduced in the case? A. No, sir, I have not. I have only been giving a hand in coloring.

XQ5 Had you ever seen the Model D machine in Germany? A. No, not the Model D.

XQ6 What model of the United Shoe Laster have you seen in Germany? A. I seen one, I think it was Model A.

XQ7 Have you ever had drawings in your possession showing the United Shoe heel seat laster? A. No, except the patent drawings.

XQ8 You have seen the patent drawings? A. The patent specification I saw.

XQ9 The patent specification. It is part of your duty to keep track of patents issued in the United States, as well as in other countries? A. It is, yes, sir.

XQ10 On machinery of this class? A. Yes, sir.

XQ11 Do you recall an incident that happened at the factory of the Bata Shoe Company in Zlin, Czechoslovakia, when a United Shoe heel seat laster was taken apart and drawings of it made by Mr. Heinrich Mueller, of the Moenus Company? A. No, sir.

MR. TOULMIN: We object, Your Honor.

THE COURT: The answer is "No, sir."

XQ12 You don't recall any such thing? A. I don't know.

XQ13 That is to say, you were not present when any such thing happened? A. I don't know anything about it.

XQ14 You went to see the United Shoe Machinery Corporation after the notice of infringement had been sent to the Moenus representative, Albeko Shoe Machinery Company?

MR. TOULMIN: I object, Your Honor. I did not go into this question on direct.

MR. LYMAN: The situation is a little different, Your Honor.

MR. TOULMIN: There is no difference in the situation, Your Honor. This is trying an entirely different lawsuit against a different defendant.

THE COURT: I understand that, but of course this witness is subject to impeachment, attack on his credibility. I don't know what the object of the question is.

MR. LYMAN: The object of the question is, Your Honor, this witness now takes the position that in the United Shoe Machinery Company lasters here in evi-

Testimony of Bruno Kath.

dence there is no substantial difference exhibited as compared with what was present in the first McFeely patent. The fact is that when the notice of infringement was sent to Moenus this witness, representing Moenus, explained to Mr. Condon that they in their search had overlooked the McFeely patent in suit and requested a license under that patent, which was denied, and then offered to remove from this country all of the machines which they had installed here if they would relieve them of damages for past infringement. It seems to me that is perfectly competent.

MR. TQULMIN: In the first place, that allegation was in Paragraph 9 of the original bill of complaint and upon motion stricken; secondly, it was the purported subject-matter of Mr. Cobb's testimony and again stricken and the correspondence stricken. Assuming to be true all he said, let us assume that for the purpose of argument, nevertheless it would not settle this lawsuit on the question of validity at all. It has no bearing on this issue at all.

MR. LYMAN: May I say that while it is true that an allegation that the Moenus Company had agreed to remove all of its machines in this country was stricken from the answer on order of Judge Nevin on defendant's motion, thereafter defendant filed its answer in which it made the allegation which I read to Your Honor when it originally came up, to-wit, the allegation that the defendant had gone into this matter—that defendant Williams had been lulled into security by the fact that plaintiff had taken no steps, sent no notice of infringement and taken no steps.

THE COURT: I think so far as this testimony relates to the controversy between the United Shoe and Moenus it is not relevant, but the witness could be examined in view of his statement that there is no substantial change in the second McFeely over the original McFeely, as to how he can reconcile it with this other knowledge on learning of the second McFeely patent.

MR. LYMAN: That is what seems to me makes the evidence material.

THE COURT: I think he may be examined as to his statement there is no substantial difference, without reference to the admissions of the Moenus Company.

MR. LYMAN: Your Honor, the course of conduct of the Moenus Company, to which this witness was a party, belies the allegation that there is no novelty in the patent in suit over the prior patent.

Testimony of Bruno Kath.

THE COURT: What I mean to say is we do want the testimony to be limited strictly to proving or disproving the issues between plaintiff and defendant in this suit without reference to any controversy you may have with Moenus, who is not a party to this suit, but I say that the witness may be examined as to a statement that there is no substantial change, and he may be asked as to any statement made concerning the overlooking of the McFeely patent with reference to the Moenus situation. Is that clear?

MR. LYMAN: I think so, Your Honor. I will try to follow that, and if I go beyond what Your Honor's suggestion is, of course you will check me, and my brother will. I think I have in mind what Your Honor suggests.

MR. O'DONNELL: May I be heard on that a moment, Your Honor?

THE COURT: Yes.

MR. O'DONNELL: The point I would like to bring out at this time is that here we have a representative of a foreign corporation. They are threatened with an infringement suit by the United. The law favors compromises and settlements. Whatever they may do or say in connection with a threatened lawsuit should not be held as an admission or a statement, because the law protects anything that they may say or do by way of a compromise settlement or adjustment of a threatened lawsuit.

THE COURT: I know, but we are past that. I am ruling with you on that point.

MR. O'DONNELL: I understood you to say he might be permitted to show him a letter, for instance, which his company wrote in which they made the statement—

THE COURT: —No, the point is here; as I say, I am trying to keep the record free of any testimony or any controversy between the United Shoe and Moenus and to limit the record to testimony proving or disproving the issues in this suit, but this witness has made a statement on direct that there is no substantial difference in the second McFeely over the first McFeely. Now, he is subject, of course, to impeachment or attacks on his credibility.

MR. O'DONNELL: That is correct.

THE COURT: And if he did make a statement at some time that they had overlooked the second or original McFeely patent he may be examined as to whether or not that would alter his testimony that there are no substantial changes in the second over the first.

Testimony of Bruno Kath.

MR. O'DONNELL: That they overlooked it—that is, the Moenus?

THE COURT: That he personally overlooked it.

MR. O'DONNELL: That he made a statement to that effect.

THE COURT: Yes, this witness, not the Moenus Company. He is subject to attack on his credibility, and impeachment.

MR. O'DONNELL: Even though statements might have been made in negotiations with the United for settlement of a threatened infringement suit of this company.

THE COURT: We are going to try to do the best we can to keep this record straight and at the same time give everybody their rights.

By Mr. Lyman:

XQ15 Mr. Kath, you had at one time an interview with Mr. Cobb, of the patent department of the United Shoe Machinery Corporation? A. Yes.

XQ16 That was in January of 1936? A. The end of January or beginning of February; I am not quite sure on those dates.

MR. TOULMIN: Our objection goes to all of this, Your Honor.

XQ17 How did you happen to be in this country at that time?

MR. TOULMIN: We object. That will go into the whole question.

XQ18 I don't know—I will strike that question out. In the course of that conversation you had with Mr. Cobb did you say when you authorized the marketing in this country of the Moenus heel seat laster you had made a search of the art and had overlooked the McFeely patent here in suit?

MR. TOULMIN: We object.

THE COURT: The witness may answer.

MR. TOULMIN: Exception.

A. May I have the question again, please? (After question was read): That statement is not quite correct. That was not me personally. I did not make that assertion personally. It was made by my firm, by somebody else.

MR. O'DONNELL: We object. You can't testify to that. He can't testify to what was said by his firm. That is hearsay.

Testimony of Bruno Kath.

THE COURT: This witness may be examined, I say, as to what he knows about that, as bearing on his credibility.

XQ19 I am asking you what you said then to Mr. Cobb in that connection. Put that in your own words.

A. What I said to Mr. Cobb?

MR. TOULMIN: Same objection.

THE COURT: He may answer.

A. As far as I remember I said to Mr. Cobb "This patent has been overlooked and we don't think the patent is valid but we don't want to have any litigation on it." And there was some talk whether there could be a license given. As far as I remember I did not ask for a license but there was some talk as regards a license and then it has been decided we could not have a license, and then I offered to withdraw, to get my firm to withdraw these four machines which were in the country, and they in turn offered not to sue us on this matter. Now, I must correct this statement. I did not say then the four machines; I said we had some machines in this country, two I knew of and the machines which were at Williams I did not mention.

MR. TOULMIN: I move to strike that answer because it gives counsel the answer which involves the Moenus Company and the whole question of admission.

THE COURT: The portion of the answer after the statement he overlooked the McFeely patent--You said that?

A. The firm has overlooked it, the company.

MR. LYMAN: The McFeely patent in suit?

A. Yes.

THE COURT: The motion as to the latter part of the answer will be stricken and you may have an exception.

MR. LYMAN: I take it under the rule it will stay in the record so the Court of Appeals can pass on that question.

THE COURT: Oh, yes, it is in the record.

MR. LYMAN: I think that is all, Your Honor.

MR. TOULMIN: That is all.

Thereupon Mr. Kath retired from the witness stand.

MR. TOULMIN: Now, if Your Honor please, down in the Williams plant we have two mechanics who keep machines going. One is Steve, the man you saw here this morning. I have talked to Reinhardt, and I would like to have his testimony. For that reason I have sent Steve back and Reinhardt is on his way here. I have

Testimony of Bruno Kath.

been told he will get here at three o'clock. I have no other witnesses until he arrives. Your Honor has been more than good to us and I am embarrassed, but I was laboring under a condition I couldn't help.

MR. LYMAN: I am sorry. I wasn't listening to what Mr. Toulmin said at the beginning.

MR. TOULMIN: I said I had finished all of my fact testimony with the exception of your completing the cross-examination of Dr. Greene, and this one man Reinhardt whom Steve mentioned, and I have him coming here to testify and he is on his way here to exchange with Steve.

THE COURT: Is his testimony necessary?

MR. TOULMIN: I don't want anything said on this record we did not produce him. I want to have him here so there won't be any question about it.

MR. LYMAN: I shouldn't object, Your Honor, to that. I think we could go on with perhaps a couple of witnesses on our case. Of course, I can't go on and complete it until the cross-examination of Professor Greene is finished and this witness that Mr. Toulmin is going to produce has testified, but I think we are all interested in saving as much time as we can and if we could adjourn now until two o'clock I think we could start with a couple of witnesses.

I want to say with reference to this last witness, Your Honor, that he made a number of statements which are mere conclusions and that I did not cross-examine him about those because I think the record is plain, or will be plain on those points, and I hope it is understood that my failure to cross-examine the witness on those points is by no means an admission of the truth of what he says.

MR. TOULMIN: That is your responsibility.

At this point a recess was taken until two o'clock in the afternoon of the same day, Tuesday, January 24, 1939.

AFTERNOON SESSION

TUESDAY, JANUARY 24, 1939.

Court met pursuant to recess, counsel being present on behalf of both parties.

MR. TOULMIN: With Your Honor's permission I would like to recall Mr. Williams and ask him one question, so I think the record will be clear.

THE COURT: All right.

Thereupon,

Forrest L. Williams,

recalled as a witness on behalf of defendant, having been heretofore duly sworn, resumed the stand and testified further, as follows:

By Mr. Toulmin:

Q52 Mr. Williams, will you tell the court whether the Moenus Company, the manufacturers of the machines here in question, is directing, financing, controlling, or in any way managing the defense of this case?

A. They are not.

Q53 Who paid the expense or guaranteed the expense of Mr. Kath coming to this country? A. Williams Manufacturing Company.

Q54 Is the Moenus Company contributing financially in any way to this suit? A. To the extent I would judge of Mr. Kath's salary, but nothing financially.

Q55 Nothing financially? A. No, sir.

MR. TOULMIN: That is all.

MR. LYMAN: No cross-examination.

MR. TOULMIN: If Your Honor please, I would like to offer in evidence the two file wrappers of the patents in suit. I do not have certified copies of either one; but Mr. Lyman has agreed we can substitute later the certified copies. I would therefore like to offer in evidence the file wrapper of the McFeely patent 1,558,737, as Defendant's Exhibit F-2, and the file wrapper of the Hoyt patent in suit, 1,508,394.

Certified copies of the file wrappers so offered in evidence were later substituted for the typewritten copies first supplied, and the said certified copies are made part of this record, marked as follows:

Defendant's Exhibit F-2, of patent in suit 1,558,737, to McFeely.

Defendant's Exhibit G-2, of patent in suit 1,508,394, to Hoyt.

MR. TOULMIN: Your Honor, I want to say this. In the interest of economy of time and expecting we will be able to brief this case, I am not going to state certain positions as to our defense and our purpose of certain proof at this time which I ordinarily otherwise would, because we can expedite matters when that comes up later. So if Your Honor will indulge me I think we can save time by doing that, and not think I have neglected it, because I think that is the quickest way.

Testimony of Forrest L. Williams (Recalled).

MR. LYMAN: Will the arrangement be, Your Honor, that after the conclusion of the trial we file briefs and argue it at some later time?

THE COURT: That is the way we usually do. I think that is the best way. It will give you an opportunity to study the testimony in the case and prepare your briefs and agree on a day for oral argument later.

MR. TOULMIN: That will be very nice.

MR. LYMAN: Yes.

Thereupon,

Rene E. Duplessis,

called in rebuttal on behalf of plaintiff, resumed the stand and testified as follows:

By Mr. Lyman:

Q17 Mr. Duplessis, I wanted to ask you what the function of these set screws which are mounted in the pivoted arms in the plaintiff's machine, as shown in Plaintiff's Exhibit 8-A, and which are also present in the defendant's machine, as indicated on Plaintiff's Exhibit 34, is. A. Your Honor, in the New York territory we had a heel seat lasting machine placed on which they wanted to do very small children's shoes and a man filed this abutment that you see here, which has been called the back stop, so that these arms could close in more so that a very small heel band could be inserted and we would have a conformity to it. Later on they wanted to put a woman's heel band of a considerably larger size, and these arms, through the springs, were exerting pressure so much on the band that it was keeping it closed all the time. The complaint came in to our experimental department and I was assigned the job of inserting set screws in there so we could limit the motion of these arms when we used the large band, and let them come in as far as they could in the use of a small band.

THE COURT: That was my suggestion yesterday. I said it appeared that they were to offset the pressure from those two (indicating on model). Is that the real object?

MR. TOULMIN: That is correct, Your Honor. We have no dispute about that.

Q18 That is to say, the pressure of these members would bring them in too far. A. Yes. It kept on

Testimony of Rene E. Duplessis (Rebuttal).

wearing the bands out and they did not become effective any more on the women's shoes.

THE COURT: That is what I meant yesterday when I asked Dr. Greene if it was his testimony that because of these two screws that it nullified, and he said yes.

MR. TOULMIN: That is right. We are in agreement that is one element.

MR. LYMAN: Of course, we don't agree with that at all.

THE COURT: I understand, but I wanted to get definitely just what his position was as to these two screws, but it was his suggestion because of these two screws that it nullified that element of the claim that referred to loosely mounted arms.

A. Your Honor, we did not change the mounting of the arms at all. We just added the set screws and we did that very late in 1921.

THE COURT: That is all right.

MR. LYMAN: Your Honor understands, it is our theory—

THE COURT: —Yes, that it does not nullify that element of the claim.

MR. LYMAN: Your witness, Mr. Toulmin.

MR. TOULMIN: No cross.

Thereupon Mr Duplessis retired from the witness stand.

MR. LYMAN: I want, Your Honor, now to explain the construction of the tacker-wiper combination in that old McFeely patent. It is pretty complicated and we have had a model built by which it can be illustrated:

THE COURT: That is the early McFeely patent which you say the present—

MR. LYMAN: —Which this patent in suit improves. Let me remind you what the McFeely patent in suit shows in this respect. (Indicating chart): This is the McFeely patent in suit and there is a manual adjustment out here for the preliminary movement of the wipers. Remember, we traced that through. Here it is on this model (indicating). The operator moves this ratchet and that has the effect, through these connections in here, of making these wipers swing in or out so they can conform to the particular size of the shoe you are going to operate upon. That is a manual adjustment preliminary to the actual operation of the shoe, and then when that is done and the machine operates, by a power stroke it gives the power movement; but there is a pre-

Testimony of Rene E. Duplessis (Rebuttal).

liminary adjustment in this machine for making the wipers, before they have had the power movement, conform to the shape and size of the particular shoe you are working on.

THE COURT: Does that relate to the portion of the claim that there was—is that 85?

MR. LYMAN: Additional power means, that claim.

THE COURT: Claim 85.

MR. LYMAN: It goes to the heart of both claims 6 and 85.

THE COURT: Before you go any further, Dr. Greene's position was that there was no additional power means, that all the power came from the cam and there was no additional power means; and your position here then is that because of the hand adjustment as the first move affecting the wipers that what you mean by additional power means the cam operation.

MR. LYMAN: That is right.

THE COURT: Transmitted through 188.

MR. LYMAN: Through this rod here. But that is not the point I am discussing with Your Honor now. I am not discussing the meaning of the claim, the question of infringement at all: I point out that in the McFeely patent in suit there is that preliminary adjustment for the wiper position and for the power stroke, and that in the defendant's machine (placing another chart before the court) there is a similar arrangement, as was pointed out yesterday. This hand wheel here which one turns and through these connections that we see here swing these wipers into a predetermined position, any position you want, that is, you can swing them in so they can conform to the contour of the shoe you are working upon, is a preliminary matter, and then comes the power stroke, and they do the power wiping over the shoe. Now, that is the meaning of these claims 6 and 85. Let me just read those claims to Your Honor once more:

"6. A machine of the class described having, in combination, end lasting wiper plates for closing over a last bottom, manually operable means determinately to adjust the positions of the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last,"

that is that preliminary adjustment; and then means to effect the wiping operation. You see, one feature of that claim is this preliminary adjustment of the wipers.

Testimony of Rene E. Duplessis (Rebuttal).

THE COURT: Yes.

MR. LYMAN: Now the other claim dealing with this point, 85, similarly provides that feature. You see, it says: "In a machine of the class described, the combination with last and shoe positioning means", then "means for effecting a preliminary adjustment of the wipers to the contour of the shoe", and then "additional power means for subsequently operating the wipers".

Now, Dr. Greene has said that in the early McFeely patent 1,129,881 every element of those claims is present. He says that that is his principal reference, chief reference against the claim, and that in that early McFeely patent is found all elements of the claim, which would include this preliminary adjustment. And you heard Mr. Kath this morning, in comparing the present McFeely patent in suit with the earlier, or the Model A machine, say that they were the same except for certain other differences. He did not point out any difference in that respect.

Now would Your Honor be so kind as to look at the early McFeely patent 1,129,881, Figure 13?

THE COURT: All right.

MR. LYMAN (Indicating drawing): Here is the enlarged drawing of that patent which Dr. Greene produced and that will be convenient for you to refer to. As I say, the wiper mechanism in here, (indicating), all this mechanism and that mechanism, is complicated, it is difficult to understand, and we have had a model built by which it can be explained to the court, so I will call the witness who made the model, Mr. Willhauck.

Thereupon,

Augustus D. Willhauck,

recalled on behalf of plaintiff, having been heretofore duly sworn, testified further as follows:

By Mr. Lyman:

Q111. Mr. Willhauck has already been sworn. Mr. Willhauck, you have made, have you not, a model representing the wiper-tacker construction of the McFeely patent 1,129,881? A. I had a model made under my supervision.

Q112 That was made in preparation for the trial of this case? A. It was.

Q113 I will ask you now to present it to the court and explain the operation. In the first place, I will ask you

Testimony of Augustus D. Willhauck (Recalled).

if this model is made in accordance with the description of the patent 1,129,881 and in accordance with the figure of that patent representing it, Figure 13? A. It is.

Q114. In this model you have substituted a hand lever for the cam connection that is shown in the patent?

A. I have.

Thereupon the model referred to was brought into the court room.

MR. TOULMIN: If Your Honor please, in order not to interrupt the examination or even the offering of this, it will be understood I have not had a chance to check it, and any objection I made may be reserved and we will go right straight on.

THE COURT: All right.

Counsel for plaintiff thereupon offered in evidence the model referred to, and the same is made part of this record as **Plaintiff's Exhibit No. 35.**

Q115. Go ahead and describe this model, please, Mr. Willhauck. A. These members here, one, two, three, four, five of them, are the tackers.

Q116. Are they actual tackers or dummies? A. Dummies, as far as to represent them. In other words, we haven't got any means of feeding or driving; we have omitted them for the matter of cutting expense. Here we have the wipers, these two members here, this member here and this member here.

MR. LYMAN: Your Honor, if you want to see it on the drawing, it is these (indicating).

A. Now (removing a part of machine) those are the corner tackers. There is the roller that is engaged on the rear portion of that corner wiper.

MR. LYMAN: Can you see, Your Honor?

THE COURT: Yes.

A. That is the segment lever which connects under these racks which are shown there. There is the equalizer which connects the two racks; the one at this side is the exact duplicate of that. There is the spring which keeps that corner tacker in engagement with this member here. There is the pinion which connects the segment lever with the rack. Now I have to take that up to show the construction. (Removing another part from machine): That piece is the member which is going down through that slot in the wiper, which isn't very clearly

Testimony of Augustus D. Willhauck (Recalled).

shown in that view. I believe this is what is represented (indicating on drawing), that dotted line.

MR. LYMAN: That is what the patent calls an equalizer. May I interrupt to say that according to the patent there is attached under the tacker here this feeler member. It feels for the shoe and when it comes into contact with the side of the shoe, along with the heel band, if there is one there—then when it feels and hits the band things begin to happen which the witness will tell you.

A. Here is one here which is attached to that end tacker, which I can reach by going up in there (indicating another portion). Of course, that represents one tacker. There is a plunger which presses on this angular surface, which is that member right there (indicating drawing). This member here (indicating device) is the member with the pin projecting out of it, which is this member right here (indicating drawing). Here is shown strictly a pin (indicating drawing). There is a cam for operation (indicating device). That is so it can turn and not slide—right in there. That is that member there. That cam roller is fastened into the slide which carries this wiper.

By Mr. Lyman:

Q116 This (indicating on chart?) A. That is that element here (indicating device). You see, that is this wiper and it is carried on this member here, which is integral with it, it is a part of it. The other side of this, if you wish to see it, is the same.

THE COURT: No.

A. Only the opposite hand when you operate this member here.

Q117 That is the cam? A. The cam. You transmit your motion down through the rack. It turns this lever in that direction, rotates the pinion and forces this side wiper and tacker over the open end here inwardly over the shoe. The forward motion here also tends to force it forward on this support at the same time it is going in. I can illustrate that after I get this in, because I have taken out the connection which does that.

THE COURT: Could you operate it—leave it open and just hold it?

A. I shall try. I don't believe—

MR. LYMAN: —Point out to the court what would happen here.

Testimony of Augustus D. Willhauck (Recalled).

A. You have a plunger here (indicating) with this spring behind it. That hole runs all the way through. That plunger rests on this surface here.

THE COURT: And this (indicating) engages it and it goes to work; is that right?

A. It will hold that member in that position, which allows the unit to move inwardly. These springs are light, of course. They are not as heavy as the hood for the simple reason it is a model. We have no motor power to do it. Now when that is kept in that position there, it keeps this surface here in contact with that surface of the rack. When that feeler, which extends down through here and is fastened to this tacker, meets resistance it stops this member from moving forward, but this member here can move forward and it will cam this member here over in this direction.

By Mr. Lyman:

Q118 Against the pressure. A. Against the pressure of this plunger and the spring, and that is because the roller and the pin are attached to this one and if this is stopped it will retract this wiper and the end one. The action here and the construction here is identically the same; that is as far as it will operate. We have a member similar to this, only it is resting here and it is cammed off this way. When it starts back this is to pick it up again and throw the member into the proper position, and it is held there in proper position by the pressure which is applied by that spring and plunger and on that surface there.

MR. LYMAN: It is a little difficult to understand, Your Honor.

THE COURT: I will tell you, it is complicated, but I say I understand the operation.

By Mr. Lyman:

Q119 Are you through explaining from that point of view? A. From the construction.

Q120 Suppose you put it back and tell the court what happens, what the motion is in the operation on the shoe; and perhaps you can put a shoe in there so that we can see it act. (After witness replaced parts of machine): First I suggest that you tell the court now, describe orally the operation, the things that happen when the device is operating, and then put in a shoe afterwards to explain. Let him see those. A. The shoe is presented underneath there. The shoe is placed

Testimony of Augustus D. Willhauck (Recalled).

under there with the proper mechanism to carry it and hold it. When it is in position the power, or the clutch is tripped and the power is applied to the machine. This member, here, which is the end tacker and wiper, will move forward. Then through that system which was shown in there the power is transmitted to the side tackers and wipers and they will move inwardly over the heel seat. These two corner tackers and wipers, of course, the wipers must follow because they are attached to this and attached to the side wiper, and your corner tacker is kept in contact with that member by means of the spring which is constantly pushing it forward. Now when these feelers underneath here meet resistance, which is either the shoe or the shoe with the band around it, this motion forward and inwardly is stopped because it hits those, but further motion of this part then cams against that angular face that you see on this lever and the one in back and the one here and then due to the construction those wipers will move backwardly, this way here and that way there and that way there.

Q121 Off the shoe? A. Off the shoe, in a direction off the shoe. Then the whole mechanism returns to that starting position. Then it will come forward for a second operation and go through the same motions again and then come to rest and the tack will be driven and it returns to the starting position again.

THE COURT: You just mentioned two. A. Two wipes on this.

THE COURT: That is, on the original McFeely there are only two wipes.

A. As I understand, there are only two wipes on that cam.

THE COURT: All right.

MR. LYMAN: On the original McFeely there was first one breaking down wipe, and then a second wipe, but in each of those wipes, the wiper having gone a certain distance comes back before the tackers operate. The second operation, the tackers operate, but the theory of this machine requires the wipers to be drawn back before the tacks are set.

THE COURT: On the original McFeely it requires the tackers to be withdrawn; on the McFeely patent in suit you have two complete wipes, then a half-wipe, and the tacks go in.

MR. TOULMIN: Just beyond the wiper.

MR. LYMAN: I think it is really astonishing that Your Honor can remember these things. I have the

Testimony of Augustus D. Willhauck (Recalled).

greatest difficulty. But Your Honor is right. Now, have you something more to ask?

THE COURT: No. I just wanted to be sure.

By Mr. Lyman:

Q122 If you could put in a shoe there I would like the court to see those motions. A. You will notice that this end wiper here is practically in the center line of the holes of the wipers and these are covering up a portion of them on either side. I think I can get that shoe in there, but you must realize I am not going to wipe that heel seat. I could not do it. It is just simply to show it. I will place that shoe on that member there, which is just a pin to keep that shoe from being forced about. (Demonstrating): Now we will move this lever—

Q123 —Predict to the judge what is going to happen. A. The first thing these will move in freely, the wipers will go over the heel seat until these members which are pointed out will contact the part of that—

Q124 —The feelers? A. Yes. Both these members in the rear and the two side ones, when they meet that shoe and have taken all the play out that is probably in here, then your wipers will tend to—they don't tend; they will retract because there is nothing for them to do until they can move those members out of the way.

Q125 The tackers will not go any further after the feelers have made their contact? A. Yes.

THE COURT: The feelers control the tackers? A. They do. (Demonstrating): There is the start of your motor. About in there (indicating) those feelers have probably just contacted the shoe. I don't know whether you can see it or not, Your Honor. This one is a little off to the—

THE COURT: —I can see it.

A. I shall try and control that. They are practically set. There may be a little movement. When I begin to put on power these wipers will retract. If you will notice their position in relation to some particular edge you will see they will retract and the rear end will go back in that direction. Of course, when they go back and this goes back they are going to pull this curve, which is the corner wiper, back a little also. Those wipers are now moving off that way. If you will notice, the edge of that end wiper is back of the holes when this is moved back in the position this is there, and this is advanced. That is your first wipe. The machine then goes back

Testimony of Augustus D. Willhauck (Recalled).

to that position (demonstrating). Now we come ahead again and we contact the shoe, get it in there solid, and those parts go this way and that way and that way. Now you are ready to drive the tacks in, and the machine returns to its starting position. That is the way that device will operate.

Q126 I will ask you, Mr. Willhauck, whether there is in that mechanism any preliminary adjustment whatsoever for the wiping position. A. There is not.

MR. LYMAN: That is a vital question, Your Honor.

THE COURT: Now you are talking about the hand adjustment in connection with 6 and 85.

MR. LYMAN: Yes, the adjustment to which these claims relate.

By Mr. Lyman:

Q127 These claims say "manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper." That is one of the claims, claim 6. And the other is claim 85: "means for effecting a preliminary adjustment of the wipers." Is there in the apparatus disclosed in this McFeely patent 1,129,881, any mechanism whatsoever for effecting any preliminary adjustment of the wipers? A. No, sir.

Q128 From a practical point of view what have you to say as to the merit of that mechanism that is shown in this early McFeely patent, this wiper-tacker mechanism?

MR. TOULMIN: We object, Your Honor. They are estopped to question the utility of their own patent. We have a number of authorities on that subject.

THE COURT: I think this; it may be a question for the court. He may describe the limits, the extreme limits to which this original McFeely could be used.

MR. LYMAN: I wanted him to. You will notice, Your Honor, that there is in this McFeely construction, this old patent 1,129,881, a retraction of the wipers after they have gone forward.

THE COURT: Yes.

MR. LYMAN: I call his attention specifically to that movement and ask him if that is an inferior or superior motion, whether that has practical advantages or disadvantages.

THE COURT: There is an objection coming up. I can see it.

Testimony of Augustus D. Willhauck (Recalled).

MR. LYMAN: I don't know why there is any objection made. My brother is saying, Your Honor, that this old patent shows everything there is, and his witnesses said that it has an adjustment which it obviously does not have.

THE COURT: I think that the witness may describe the operation, and then it becomes a question, of course, for argument as to the practicability. But I think the objection is well taken at this point.

MR. LYMAN: I should think the court would want testimony of a man like this as to whether that is meritorious or not.

THE COURT: You understand that I am just trying to keep this record as straight as I can and trying to prevent errors of evidence creeping in. As a rule in this court—I might as well tell you—if you insist on a position the court will let you have your way. Now it is up to counsel. If you think it is necessary we will let you put it in and give the other side an exception. We have no ironclad rule but we want the responsibility placed where it belongs, that is the only thing.

By Mr. Lyman:

Q129. In a mechanism such as is shown in this old McFeely patent and as is illustrated in your model, Mr. Willhauck, is there any danger of the machine failing to wipe properly on different kinds or sizes of shoes?

A. I believe there is.

XQ130 Explain why.

MR. TOULMIN: Your Honor, so long as you understand my objection and he is going to put it in and I have an exception, I won't interrupt you.

THE COURT: No, I have made my position plain here. I say they have a right to ask the witness to describe the operation of the patent and what the machine will do under a given set of circumstances.

MR. TOULMIN: All right. No objection to that.

Q131 Go ahead, Mr. Willhauck. A. You noticed that when that device was operating there that you wiped over your heel seat and then after wiping it over what do you do? You turn around and pull it all back again. You do the same thing on the second one, which would have a tendency to give you a lasted heel seat.

THE COURT: There is a movement which permits it to rise.

MR. LYMAN: That is what the witness is saying, Your Honor.

Testimony of Augustus D. Willhauck (Recalled).

THE COURT: I understand what he has just said is this. When you give a wipe and the machine stays in a fixed position and the wiper goes back, there is a tendency to pull the upper back with the—

MR. LYMAN: —that is right.

THE COURT: I understand.

By Mr. Lyman:

Q132 What happens, or what might happen in the case of a particularly wide shoe or a particularly narrow shoe, with that kind of mechanism? A. I believe—

MR. TOULMIN: —I do not want to interrupt, but I want to be sure it is understood I am objecting to this line of testimony and want an exception.

THE COURT: You are objecting to this witness describing what happens to the shoe?

MR. TOULMIN: No, I did not make myself plain. I am glad Your Honor mentioned that. I am objecting only to the extent that I don't think they can come in—assuming his explanation is correct; that makes no difference to me—and criticize their own patent and have testimony derogatory to their own patent. That is the basis of my objection. I have no objection to this description of the machine being put in. I am happy to have it put in because I think it is of advantage to the court and ourselves.

THE COURT: Just a minute, on that subject. What they are trying to show here now is the practicability of the wiping arrangement on the later McFeely over the early McFeely.

MR. TOULMIN: Yes.

MR. LYMAN: That is exactly it, Your Honor, the advantage of the patent in suit as compared with this.

THE COURT: Of course, this all becomes relevant, it seems to me, in view of Dr. Greene's testimony and Mr. Kath's, that the patent in suit was substantially identical in all the particulars in issue with the original patent in suit, and they are now in rebuttal trying to show that is not so.

MR. TOULMIN: All right, Your Honor. I am not trying to be captious.

THE COURT: No. You save all your exceptions. That is all right.

By Mr. Lyman:

Q133 Go ahead, Mr. Willhauck: A. May I have that question again, please? A. The question is—
not to take time to repeat the question—would there be

Testimony of Augustus D. Willhauck (Recalled).

conditions under which a mechanism of this sort (referring to Exhibit 35) would not act properly on wide shoes or on narrow shoes? A. I believe on narrow shoes you would have a very bad condition. I don't think you would get a retraction of your wipers or, if you did, you would get them wiped right off the heel seat, especially on the tackers.

Q134 Can you explain a little more fully why that would happen? A. Well, in a construction of this kind you have got to go to work and consider the smallest shoes that are to be done. Then you must also consider the bigger shoe that is to be done. Assuming we do consider a certain range of sizes of heel seats on that, and we cover that, we have to allow a condition there so we can get the biggest one in, and then we have got to be sure we are going to wipe that heel seat on the smallest one fully over the lasting margin. That means that wiper, to start, must be away off the small shoe, and we have only built into the cam enough of throw to get into a small one, in which as a fact we will get heel seats in some places that are going to be smaller than that kind. Well, the machine is going to go in only so far. We get only a pressure wipe over that small heel seat, which is smaller than has been taken for granted, and then when the wipers retract they are pulled completely off that heel seat.

THE COURT: I wonder if at this point a question would be in order. What provision did the original provide for various sizes?

MR. LYMAN: Absolutely none, Your Honor. There was no preliminary adjustment whatsoever in that patent.

THE COURT: Would that depend on the skill of the operator?

MR. LYMAN: The machine is supposed to automatically feel for the shoe and adapt itself to it, and there is no adjustment whatever. The operator can't do a thing about it; the machine will operate itself.

THE COURT: The feeler controlled the tacker adjustment in the original McFeely and it had to adapt itself.

MR. LYMAN: The feeler tells it when to stop.

THE COURT: I say, it was automatic.

MR. LYMAN: Yes, sir, and absolutely no preliminary adjustment of the wipers in that machine, and those are the elements of these claims we are suing on, and yet the expert witness for the plaintiff has said that this apparatus contains every element of those claims.

Testimony of Augustus D. Willhauck (Recalled).

THE COURT: You mean for the defendant.

MR. LYMAN: For the defendant, yes. You may cross-examine.

MR. TOULMIN: No cross.

Thereupon Mr. Willhauck retired from the witness stand.

MR. LYMAN: That is all we have with the witnesses today, Your Honor.

MR. TOULMIN: Your Honor, this man Reinhardt is due on the C. & O. train at three o'clock. It is three-fifteen. I am embarrassed he is not here.

THE COURT: We will recess until he arrives. That is your last witness?

MR. TOULMIN: That is my last witness.

Thereupon a recess was taken, after which the trial proceeded as follows:

MR. LYMAN: If Your Honor please, I should like to offer in evidence as a part of this model Plaintiff's Exhibit 35, the shoe upon which it has operated, and may that be marked Plaintiff's Exhibit 35-A?

THE COURT: Yes.

The shoe so offered and admitted in evidence is made part of this record as **Plaintiff's Exhibit No. 35-A.**

MR. LYMAN: I would also like to call Your Honor's attention to the fact that the early McFeely patent describes the operation of that device just as it has been demonstrated to Your Honor, pointing out that the tackers advance to the position determined by the feelers, that then they stay there and the wipers retract, leaving them there so as to be out of the way of the tackers.

MR. TOULMIN: I did not cross-examine.

Thereupon,

Louis Nicholas Reinhardt,

called as a witness on behalf of defendant,
having been first duly sworn, testified as follows:

Examined by Mr. Toulmin:

Q1 Will you state your name, please? A. Louis Nicholas Reinhardt.

Q2 Where do you live? A. Sciotoville, Ohio.

Q3 Where do you work? A. At the Williams Manufacturing Company.

Q4 How long have you worked there? A. I worked there since April 1, 1931.

Q5 What do you do there? A. I am a machinist, service mechanic.

Q6 What are the nature of your duties? Explain briefly what those are. A. Service of break-downs and maintenance of shoe machinery in the lasting and cutting room.

Q7 Do you have anything to do with these heel seat lasting machines, one of which, is in the hall? A. I do.

Q8 What is your duty in connection with those machines? A. In connection with that my duty is to see that it operates while I am on duty.

Q9 You handle one shift? A. I do.

Q10 And Schnabl handles the other shift? A. He handles the other shift.

Q11 Do you know anything about the heel band that is in this machine that is out here in the hall, or similar machines? A. You mean the leather band?

Q12 Yes; do you know what I mean by the heel band? A. Yes, sir.

Q13 Do you know what I mean by when the back of the band is attached by a wing nut or wing screw? A. Yes, sir.

Q14 Tell the court how long the wing nuts or wing screws remained on these heel seat tacking machines that are in the Williams plant. A. I can't be exact as to the date or dates that we used them.

Q15 Maybe you would like to tell us first before you answer that question about how long ago those machines came to the plant, if you recall. A. I would say about five years ago.

Q16 Go ahead and answer the other question, about how long those wing nuts or wing screws stayed on the

Testimony of Louis Nicholas Reinhardt.

back of the heel band. A. They stayed on to my recollection about a year or two years.

Q17 Have you got any way of fixing that date, Mr. Reinhardt? A. No, I haven't, except that they were awful hard to keep in there, those screws were.

Q18 Were you called upon at any time to replace them? A. In fact, that was almost an hourly occurrence to replace those screws in that heel band. It seemed practically impossible to keep them in there.

Q19 Have you observed any difference in the operation of the machine with or without them? A. Absolutely none.

Q20 Do you know what I mean by the side strap that regulates the extent of the hold-down on the side of the machine, a metal strap associated with a spring? A. The spring lays right alongside of it.

Q21 You know what I mean by that? A. Yes, sir.

Q22 Does that appear on all four machines, or on only two of them? A. It appears on all four machines.

Q23 How long has that been on the machine? A. Ever since the machines were placed on the second floor.

Q24 When were they placed on the second floor with relation to the time they arrived at the plant? That is, was it shortly afterwards or a year or so, or when they came there? A. They arrived at the plant in crates, or a partially dismantled condition, and Mr. John Bender, who is a representative of the factory, started assembling them immediately, and I imagine he was assembling them for about a month or so, and they tried them for a while upstairs and then they were brought down to the second floor.

Q25 Do you know who put those side plates on with the springs? A. I imagine Mr. Bender did.

Q26 You don't know exactly? A. I don't know exactly.

MR. TOULMIN: That is all with the witness.

MR. LYMAN: No cross-examination.

Thereupon Mr. Reinhardt retired from the witness stand.

MR. TOULMIN: That is all we have until Dr. Greene comes back.

THE COURT: Then we will adjourn until ten o'clock tomorrow morning.

Thereupon an adjournment was taken until ten o'clock in the morning of the following day, Wednesday, January 25, 1939.

MORNING SESSION

WEDNESDAY, JANUARY 25, 1939.

Court met pursuant to adjournment, counsel being present on behalf of both parties.

Thereupon,

Dr. Arthur M. Greene, Jr.,

resumed the stand and testified further, on cross-examination, as follows:

By Mr. Lyman:

XQ320 Professor, you indicated by a rough diagram the other day the connections which should be added to the mechanism in Plaintiff's Exhibit 34 to indicate the way the member marked in Exhibit 34 "A" gets its motion from the cam. I have had an enlarged photostat of this Exhibit 34 made and sketched onto it what I understand to be substantially the connection which you indicated in your sketch. The part which I am pointing to I understand to be a rack which is driven from the cam and which imparts motion to a post, to which I am pointing, by means of a spring that intervenes. A. Yes, sir.

XQ321 And that is connected to this part which is marked "A" in the other drawing? A. Yes, sir. There are two springs and two rods.

XQ322 One behind the other? A. One beneath the other.

Counsel for plaintiff thereupon offered in evidence the photostat of drawing referred to, and the same is made part of this record as **Plaintiff's Exhibit No. 36.**

XQ323 Will you indicate on this Plaintiff's Exhibit 36 the member that is marked "A" in Plaintiff's Exhibit 34, using the same designation? A. I mark a member "A" in the Plaintiff's Exhibit 36, to which I have added a rivet head "R" and would say that as I remember the defendant's machine the part "A" is slightly different from this in that there is no lip formed as shown, but the whole member goes in. I do not believe that is important but I think there is that difference.

XQ324 Then would you please indicate by the letter "M" the rack? A. (Witness marked exhibit.)

XQ325 And by the letter "N" the spring which is interposed between the rack and the member "A" and

Testimony of Arthur M. Greene, Jr. (Resumed).

by the letter "O" one of the two rods which is visible, which is moved by the spring and connected with the part "A"? A. That is correct; yes, that is correct (marking exhibit).

XQ326 I think you said the other day that in the construction shown in the Hoyt patent (placing drawing on easel), Figure 2, there is shown an adjustment whereby the position of the member 156 with relation to the arm 158 may be adjusted. A. Yes, sir.

XQ327 That being a nut here which fixes that member as to which I point in relation to the other member. A. Yes, sir.

XQ328 And I think you said defendant's machine did not have that? A. That was my memory. If I could look at the prints I could correct that.

XQ329 Perhaps you could verify that by looking at the actual machine. A. I could do that, too.

XQ330 Would you do that? A. Yes, I will; (After returning to court room and examining a sheet of photographs): There is a screw on the side and there are two members which run together so this nut may be adjusted relative to the arm, making it longer.

XQ331 In other words, the defendant's machine does have that? A. In equivalence of motion; not by the same method, however.

XQ332 I would like to draw your attention to the Copeland patent 244,714. You said, I think, that the Copeland patent and the early McFeely patent 1,129,881, each of them show all of the elements which are included in claims 6 and 85. Now one of those elements is a means for effecting a preliminary adjustment of the wipers before the power stroke takes place, which the operator does as a preliminary step. A. Yes.

XQ333 In your illustration purporting to represent the construction shown in the Copeland patent, Defendant's Exhibit J, you have indicated a certain member as what you call "Wiper Adjustment," designating following that legend with the letter C-1. Do you find anything in the Copeland patent that says the mechanism there shown is adjustable, the wiper mechanism? Is there any adjustment for the wiper? A. The Copeland patent—

XQ334 —Could you answer "Yes" or "No" to that, Professor, and then explain? A. I find preliminary adjustment.

XQ335 You find it mentioned in the patent? A. Yes, sir, and shown in the picture.

Testimony of Arthur M. Greene, Jr. (Resumed).

QX336 Where do you find it mentioned in the specification of the patent? A. On page 2, as I read in my direct testimony, beginning at line 102:

"The last-lasting devices, being secured at the end of the sliding plate C, are by the movement of the tooling plates inwardly caused to assume, automatically, the proper position which the apparatus should bear at the commencement of the last-ing—that is the upper holding devices are thrown forward and the folding plates are opened."

QX337 You regard that as a teaching that there is an adjustment of the wipers which is to be made manually by the operator? A. Yes. He moves the plate A and its associated parts into the position for beginning this stroke before he or the machine throws it into the wiping action.

QX338 The plate A? A. Yes, sir.

QX339 Where is it? A. Down at the bottom. It is the revolving plate mounted on the lower casing through the pivot a³.

QX340 What this operator does, is supposed to do in this machine, Professor, is this, according to the description, isn't it? He first takes this shoe to be lasted and puts it upon this jack. Then he pushes it forward until it engages a certain steel spring clamp, which is designated in Figure 3 as two-part construction, one at the right-hand side and one at the left-hand side, and which are designated B and B¹? A. Yes.

QX341 Now, holding it in that position, with these two springs supposed to clamp the two sides of the shoe, then he takes, according to the description, his pincers and pulls up the upper in between the clamp and the shoe, so that the clamp will hold the edges of the upper there; is that right? A. He pushes the whole thing in.

QX342 Just a moment. Before he pushes the whole thing in he has to use the pincers to pull up the upper. A. Yes, he definitely describes it.

QX343 He definitely describes it? A. Yes.

QX344 Then having pulled the upper with his pincers in between the clamps and the shoe, according to the description he then moves the shoe forwardly and the part at the center of Figure 2; on which that standard rod of d in Figure 1 and the other apparatus moves forwardly, slides in the machine as the shoe pushes ahead. A. No, that part with the two suspended

Testimony of Arthur M. Greene, Jr. (Resumed).

arms b, b on which the metal spring B is attached and the base with the uprights move together relative to the parts c¹, c¹ which are attached to the standard c⁴.

XQ345 I think I understand your meaning. Referring to your illustration perhaps we can explain it, Exhibit J. The part that you have marked in pink there is the slide upon which are mounted this rod, this vertical rod and the wipers, which are marked in green, and the tacking members; is that right? A. Yes.

XQ346 And also the part that is marked on your chart "Support for Shoe Clamp"? A. I see; yes.

XQ347 And as the operator forces the last ahead the pressure of the last upon that member carries it along with relation to the fixed elements c¹, the green elements on the right and the left, and because there are rollers on those green elements with which the wipers, as they travel along, contact, when they come in contact the wipers close in? A. Yes.

XQ348 That is the action described? A. That is correct. The reason for entitling this "Wiper Adjustment" is the fact that in this machine the adjustment is made by moving the inner part rather than the outer part. That is, preliminary adjustment is obtained by relative motion between parts and of course the term "Wiper Adjustment" is used in this figure to indicate that, that is, there is wiper adjustment by relative motion between cooperating parts.

XQ349 That is, you say the wiper adjustment is made by the operator shoving the shoe forward? A. Yes, sir, manually, or predeterminately.

XQ350 That is why you call these green elements at the right and left, c¹ of the patent drawings, wiper adjustments? A. Yes, sir.

THE COURT: I wonder at this point if we could find out if you would get the same adjustment every time or would it depend on the pressure of the operator?

A. It depends on the shape of the shoe, Your Honor. If the shape of the shoe is the same you would get the same result, in my opinion.

XQ351 What earthly reason is there for any adjustment at all in this device? According to the theory of the patent this shoves the shoe along until it has come to the position which is right; as he looks he can see it with his eye, as you can see on Figure 4. Is that right? A. He—

XQ352 —Is that so, Professor? A. He stops it when he has this adjustment made, right.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ353 Then the wiping is complete at this time?

A. He then completes the wiping.

XQ354 In other words, all he does, according to the theory of this thing, is to take his shoe and shove it in until the wipers have gone to the point where he wants them. A. That is not his statement in the patent. His statement in the patent is definitely that "the heel-lasting devices, being secured at the end of the sliding plate C, are by the movement of the toe-lasting plates inwardly caused to assume, automatically, the proper position which the apparatus should bear at the commencement of the lasting."

XQ355 Will Your Honor look at the passage the Professor is reading from, page 2, line 102? Now I suggest, Professor, for your consideration, that this is what that passage means. According to the statement in this specification, the description here, you have got two members, each of them rotatable. Look at Figure 1, Your Honor. According to Mr. Copeland, we want to do toe lasting and we want to do heel lasting on the same machine, so we have got our last,—You correct me if I am wrong.

A. Yes.

XQ356 We have got our last mounted on a standard at the left, which is rotatable about a pivot, which is also slidable. Then we have got on a standard C' of this bed, which has a heel lasting device at one end and a toe lasting device at the other end—but the ones that are shown here, the only ones that are specifically illustrated are the toe lasting device, because we have now got a toe in place there, and the specification says there is the same kind of thing at the other end equipped for heel lasting, is that right? A. That is right.

XQ357 And the patentee says that after you have lasted your toe, as shown in this Figure 1, then you swing your whole last around so as to present the heel to the apparatus, and then you swing the whole bed around so as to present the heel lasting device to the heel. Right?

A. That is a correct statement. I am not sure that the patent puts it in those words, but that is the equivalent of it, yes.

XQ358 And what he says in the passage you have quoted at page 2, line 102, is simply that if you have used your heel lasting devices, pushed in your shoe—No—that when you have used your toe lasting devices and pushed in your shoe, thereby that automatically pushes the heel lasting devices out on the other side where they are available for the heel. A. That pushes them out.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ359 Isn't that all it says? A. No, that isn't all it says. The heel lasting devices which, as you have said, are the equivalent of the toe lasting—The heel lasting devices are caused to assume automatically the proper position to begin the work.

XQ360 Now, Professor, do you mean, as the Dean of the Engineering School at Princeton University, to tell this court that that is a preliminary adjustment? A. I do.

XQ361 By the operator? A. I do.

XQ362 For the purpose of— A. —Automatically—

XQ363 —Of manually adjusting the position of the parts prior to the working stroke? A. Automatically and by hand, because he does this pushing by hand.

XQ364 And you know perfectly well, Professor, don't you, that there is no reason whatever why there should be any such adjustment in that machine, for the reason that the operator, according to the theory of it, simply puts in his shoe and keeps pushing until the wiper has come to the proper position, when he stops? A. It is automatic. He pushes in. It is automatic.

XQ365 Then there is no reason for any preliminary manual adjustment of the position of the parts, is there? A. There must be. It is manually placed in order to begin the wiping. The English is right there.

XQ366 Excuse me, sir, but the English is not, as I read it, right there. I see nothing in the English language that justifies that statement, and I am frank in saying so right here. Let us picture the operator who is handling this machine of Copeland. He is going to take his shoe. He has to put one hand on the shoe, doesn't he, to jack it forward so it will compress those clamp springs. A. Probably.

XQ367 He must, mustn't he? A. There may be other ways of doing it.

XQ368 What other way would there be of doing it? Rest up against it with his stomach? A. No. The whole device here, and his words indicate, that he is after a principle, and he hasn't given details. I am not sure that there could not be a—

XQ369 —I am asking you just what the patent shows he contemplates having. A. One skilled in the art probably handles it by hand in this picture, but not of necessity.

XQ370 We are talking about what the patent shows. So the operator has his shoe held in one hand and pressed up against these clamps while he manipulates

Testimony of Arthur M. Greenè, Jr. (Resumed).

his pincers to pull up the upper. Am I right so far?
A. Probably.

XQ371 He has got to have two hands working at that job. Now what prevents this slide going back when he is pushing it up hard enough to operate this clamp? It is free to move, isn't it? A. There is nothing shown. Nor is there anything shown which will hold this to its position. The patent is one in which other things probably have been added, but there is nothing shown here other than that which would happen as you say, probably.

XQ372 We will just confine ourselves to what this patent shows, Professor. A. To one skilled in the art.

XQ373 To one skilled in the art, yes, sir. This operator, pressing the shoe up with his left hand against the clamps and trying to move his pincers, after the pressure has been applied will find his shoe moves forward and the wipers close before he has got the upper pinched up there; isn't that right, as the apparatus is shown? A. Possibly.

XQ374 Furthermore, if you look at Figure 4 of this patent the whole movement of this standard, rod d, about which these wipers D are pivoted, is imparted by the pressure of the shoe last against it; isn't it? A. Yes.

XQ375 So there is no relative motion between the rod d and the shoe last; they move together? A. They move together.

XQ376 The result is then, isn't it, that when these wiper arms swing together as shown in Figure 4, they will have a "V" between them? Your Honor sees that "V". That isn't wiped at all. A. The end wipe.

THE COURT: That is right in the center of the heel. A. The relative motion is inward around the pivot d which, as shown in Figure 1, passes through a hole in the frame to which the clamp is attached, and the only possible end motion that might occur there would be the yielding of the springs f, f, owing to the pressure required to move the base, so that small amount of motion would be end motion also.

XQ377 That would be insignificant. A. Not insignificant but slight.

XQ378 In other words, you are bound to have in that kind of a device this unwiped V-shaped element at the end of the last? A. V-shaped element with which there may be a slight amount of lengthwise motion.

XQ379 In your figure representing this patent, Exhibit J, I don't see that you have left any "V" there. It

Testimony of Arthur M. Greene, Jr.. (Resumed).

looks to me as though you had shown the wipers co-operating in such a way that the end of the last is wiped over properly. Is that right? A. No. The figure which is colored green is to color the parts which co-operate with the wipers and cause the wipers to close. The picture is an isometric drawing which was intended to bring out the general conformation of the parts of the tackers arranged in stationary relation with the wipers; and then those which cause the wipers to take the proper position at the beginning of the motion are shown as the wiper adjustment. This picture, of course, cannot replace the showing of the other because you could not in one figure get all that these four figures show.

XQ380 The reason why the structure as shown in the patent, referring to Figure 4, for instance, necessarily leaves unwiped a V-shaped piece of the lasting allowance or the upper at the end, is because there is no bodily movement between the wipers and the last. A. Yes, sir, that is right, no lengthwise movement.

XQ381 Have you borne in mind when you said that this Copeland patent embodied every element of claim 6 of the McFeely patent in suit that one of those elements of claim 6 means to effect bodily and swinging movement of the wipers, both bodily and swinging movement of the wipers with relation to the last? A. There is that slight bodily movement, due to the spring.

XQ382 You mean in the Copeland device? A. Yes. What was your question? I thought you referred to claim 6 of McFeely.

XQ383 I asked if you had borne in mind that requirement of the claim. A. Yes.

XQ384 I wonder why, Professor, if there was any such slight bodily movement contemplated by the inventor Copeland; why he didn't happen to show it when he drew his Figure 4. A. I don't know.

XQ385 I would say perhaps the answer is there was no such movement intended. Isn't that so? A. That is your interpretation, sir.

XQ386 Wouldn't it be your interpretation, too? A. Not entirely.

XQ387 Continuing a little further with reference to this—what shall I call it—this lasting machine, supposed to be an automatic lasting machine, of Copeland? A. This is a laster and tacker combined.

XQ387 This is supposed to be an automatic laster and tacker? A. If "automatic" means that parts

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cooperate together in a predetermined way, it is automatic.

XQ388 Let us continue a little further. In the bed machines that we saw you saw the operator of the machine would repeatedly move his wipers back and forth over the last. A. In those flat machines which the trade calls "bed" machines I saw that action.

XQ389 He repeatedly moves the wipers back and forth to get a proper job? A. Yes.

XQ390 In the machines with which we are here dealing the defendant's machine and the McFeely machine, you have two wiping movements, don't you? A. Yes.

XQ391 What would happen if our friend Copeland—if the operator of his machine undertook to give two wipes? A. Unless—

XQ392 —Let me repeat it. Let me tell you what will happen and see if I am right. First he would manipulate his pincers, holding his shoe in his left hand, manipulating his pincers with his right hand; unless he was left-handed. Then he would shove in the shoe and get one wiping movement. Then he would draw it back, and he would have to go through the same movement again and pull up the upper with his pincers again before he could get a second wiping. Is that right? A.

I am not a shoemaker of 1881, but as I look at it I should, in my opinion as an engineer, force the shoe down before he retracts it. Then I do not think there would be an additional use of pincers because the original pinching should have pulled it up properly.

XQ393 This rod upon which the tackers and wipers are mounted, the rod d, Figure 1, moves in this slide which you have marked pink on your figure; mounted in that slide, it moves. A. Yes, in the extension marked b.

XQ394 What is to prevent that rod, as it moves in, from hitting that standard e? A. That I do not know. And of course I can easily see as an engineer and one skilled in mechanics that it would be a very simple thing to have the bed so arranged that the part marked b would be limited in its motion or that the base c could have a slot in it. That is a more detail which anyone skilled in mechanics could care for. As shown in the picture, apparently there would be an impact if pushed in any further.

XQ395 That would indicate that this scheme wasn't very carefully thought out, wouldn't it? A. I think Mr. Copeland, Mr. Brock and Mr. Crist must have been

Testimony of Arthur M. Greene, Jr. (Resumed).

very able men to design the machines which they did at this time, not only this patent.

MR. LYMAN: I ask that answer be stricken out, Your Honor.

THE COURT: Yes. The motion will be granted.

By Mr. Lyman:

XQ396 Please confine your answers to my questions, Professor. This inventor contemplates, Copeland contemplates that this rod d shall rise and fall in order to do the tacking; is that right? A. That is correct.

XQ397 And yet he contemplates that that rod shall be actuated by a treadle or a cam, doesn't he? A. That is correct.

XQ398 Does he show any means—confine your answer to my question—does he show or indicate any means whereby you can operate a rod or a lever that moves from one position to another by a treadle or by a cam? A. He does not.

XQ399 Will you look at page 2 of the patent to Copeland and notice this language at line 22:

"The folding plates are provided with a series of holes or nozzles, e, which are arranged a little back from the edge of the plates, and in these holes or nozzles a corresponding series or group of drivers, E, are arranged to be reciprocated by any suitable means; and we describe as one the attachment of the drivers to the hinged blocks e', and the use of the rod d, in connection with a treadle when operated by foot-power, and a cam or lever when operated by motive power, for reciprocating said blocks."

Now please tell me on the drawing where the hinged blocks e' which, according to this specification are to be reciprocated, are. Where do you find the e' on the drawing? A. On Figure 2 we note the e' under the lower edge of that figure and the lead line appears to go into the corner of the wiper.

XQ400 In other words, what this patent is saying is that the wipers have a vertical movement, isn't it? He says the wipers reciprocate vertically, doesn't he? A. The wording states that the drivers are marked in Figure 1 as small vertical rods, and indicated also in this Figure 2 as black circles. It states that these "are arranged to be reciprocated by any suitable means; and we describe as one the attachment of the drivers to the hinged blocks e'."

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ401 You have told me that the hinged blocks e' are the— A. —That the hinged blocks e', which refers to the wipers—

MR. TOULMIN: —Let the witness finish.

A. —To the wipers, and the connection in the picture indicates that these drivers extend through those blocks.

XQ402 Then the tackers are raised by raising the wipers, are they? A. I do not think so, in my opinion. You must have cooperation, because Mr. Copeland designed a method of feeding tacks on strips of paper, as indicated in the picture, and in order to loosen the tack from that strip of paper and the guide there must be motion between the driver and the tube. So that it cannot mean that the wipers are raised and then forced up.

XQ403 That is what it says just the same, isn't it? A. I don't think it really says that.

XQ404 You think it doesn't mean what it says. I guess that is your— A. —No. If you put on the interpretation that it means that it is connected, they have to move together, then of course that is an inoperative affair. So it can't have that interpretation anyway.

XQ405 This is an operative affair, this Copeland, isn't it? A. It is operative. It is the basis of many—

XQ406 —I don't care about the basis. I am asking you if this is an operative device, this thing as shown in the Copeland patent. A. I believe it is.

XQ407 Practical? A. Practical.

XQ408 Would you undertake to work it? A. As standing, or as shown in the patent?

XQ409 Yes, as shown in the patent. A. Yes, I would work it.

XQ410 Do you think it would be better than a bed machine? A. For lasting I do not think it would be better, but for lasting and tacking I think it would be.

XQ411 What means is shown in the patent, by the way, for preventing this jack from swinging around and the standard from swinging around when you are trying to hold it with the shoe in one hand? A. Mr. Lyman—

XQ412 —What means are shown, is the question. A. There are no means shown.

XQ413 I wish you would look at the McFeely patent of the prior art, 1,129,881, particularly now with reference to the heel band adjustment mechanism that it discloses. I think you referred in your description to Figures 18 and 19. Figure 18 does not show any heel band at all, does it? A. No, not as a separate entity.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ414 Figure 19 does show a heel band? A. It does.

XQ415 How is that band supported according to the description of the patent? A. According to the drawings of the patent the end members—

XQ416 —Just a minute. He referred to Figure 8. A. Referring to Figure 8, Your Honor.

THE COURT: Yes, I have got it. You asked about 19.

A. Yes, sir, I had to go back to this because 19 is in a way a reproduction of this. That is, there are grooves in member 51 and grooves in the band 58 which support the band and keep it from dropping down.

XQ417 There are four cords shown here, marked 50 in Figure 8, which run around these members 51— Referring to Figure 19, we can look here. You had better keep Figure 8 before you, Your Honor.

THE COURT: I will.

XQ417 Above these bands, each string pulled at each end and one below the other, the four of them, which fit in grooves in these loosely held members called swiveled heads 51. Right so far? A. There are members, not loosely held but members 51.

XQ418 They are called swiveled heads? A. They are on swivels, yes.

XQ419 Those bands, those four cords are supposed to go around back of the heel band, one above the other. A. Yes.

XQ420 How is the heel band held to those cords? A. Merely by means of the grooves, and as this is a patent to which a swearing was made that it was operative, I take it that the holding in of those parts, the grooves on the cooperating parts there would support it. There is a definite pulling out of the band when the heel is removed.

XQ421 Yes. The band, in other words, is just loosely inserted in those cords. When your shoe is pulled out the band comes with it. Right? A. The band comes out due to the tension on the strings.

XQ422 Springs would tend to pull these cords out and force the band right out after the shoe, wouldn't they? A. Yes, that is right.

XQ423 By the way, where do you find those grooves, Professor? A. I don't believe there is any statement in the patent itself, Mr. Lyman.

XQ424 If you will look at Figure 2 over in the left-hand corner of the figure, you will see those cords, one, two, three, four, on each side of the heel band, in sec-

Testimony of Arthur M. Greene, Jr. (Resumed).

tion, but you don't see any grooves in there, do you?

A. You don't in that figure.

XQ425 You don't on any figure, do you? A. Yes. I called attention to Figure 8, in which I believe I definitely saw the grooves on the sides.

XQ426 At all events, there is no support provided in this machine for the heel band except as the shoe forces it; when the shoe is in place it forces it against these cords. A. There is no detail, as I recall it, of the part which is marked orange exerting the pressure adjacent to the hight, and it might be possible that on those there is a lower clip. It is not shown in the patent, anyway, and I don't know of it, but it is perfectly possible to have that there, and of course in dropping down it should be there.

XQ427 We are dealing not with something that might be there but with what is shown in this patent. A. That is correct, sir.

XQ428 That was one of your chief references, I believe, to the claims of the patent in suit, which call for, as Your Honor remembers, the sliding connection, the sliding supports that are provided for the heel band for its longitudinal adjustment, being these clips here (indicating on model)—if somebody will put this in here. (Thereupon the adjustment was made on the model as counsel directed, and the court and counsel examined the exhibit).

XQ429 So that the heel band moves along, slides along with reference to its supports, keeping its position, with no constriction—just freely moves forward. You don't find anything of that sort in this previous McFeely patent, do you, Professor? A. Oh, yes. I assume the McFeely patent to be an operative machine when the patent was applied for, and in my opinion those are the side supports.

XQ430 Which are the side supports? A. Toward which the band must move when the back step is moved inward, in my opinion.

XQ431 You are assuming there must be something in the patent that is not there; is that what you mean? A. No. I am taking the patent as illustrated by all of its drawings and all of the specification, which I can read.

XQ432 You have just told me there isn't any support for the heel band except as the shoe presses it in against those cords. When the shoe is taken away the heel

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band comes with it. A. I have stated my position, Mr. Lyman.

XQ433 Will you turn to some of these other patents relating to this subject matter? And you mentioned four, Professor, in addition to the McFeely prior art patent, and they were three Brock patents and one Cavanagh. Will Your Honor turn to one glance at those patents?

THE COURT: Will you give me the numbers?

MR. LYMAN: Brock 601,935. If Your Honor will look at Figures 7 and 8, there you will see a chain. It looks like a sprocket chain of an old bicycle embracing this heel band. You will see it in each of those figures. A. Yes.

By Mr. Lyman:

XQ434 In each of these three-Brock patents, 601,935, 1,002,818 and 1,188,616, and in the Cavanagh patent 1,130,142, you have a type of construction in which there is a chain provided like a sprocket chain, which is attached to the heel band and supports it. Am I correct in that—Brock 601,935? A. And the next one after that.

XQ435 1,002,818? A. Yes.

XQ436 Brock 1,188,616? A. Yes.

XQ437 There you see it at Figure 10? A. And Cavanagh.

XQ438 Cavanagh 1,130,142, there you see it in Figure 2? A. Yes, sir.

XQ439 In this chain type of heel band supports, any adjustment that there may be provided in any of these patents takes the form of a pull of the chain forward or backward by the operating parts, and the heel band goes with it; is that right? A. Yes, it must go with it if you move it up.

XQ440 Do you find in any of those cases the sliding arrangement that is shown in the patent in suit? A. The best one is the Brock, which is similar to the others. If Your Honor will turn to the Brock patent 1,002,818, and first look at Figure 2 on Sheet 1, you will find that the support from the terminal member of the band is through a clip 275 and there is no riveted connection.

XQ441 You mean the support from the chain? A. The support from the chain is by a clip turned up.

THE COURT: 275?

A. 275 is the end of the clip on Figure 2 right at the end of the page. 274 bends around and comes up to 275,

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and in this picture there is no rivet between the band and the support, the little screw there being the part which attaches the clip. Then if we go to the Figure 3 on the next page we immediately ask, Why is there a clip at the end rather than a rivet? And of course, Your Honor can clearly see that the reason for this is that as you bring the ends closer together by the adjustments on this, either at the bight or at the side, there must be a difference in the length of a circular arc of different radius, and for that reason, to prevent crimping, Brock has provided in this and all of the others which have this end clip for the slight movement which is necessary, due to the change of configuration. If it were not so he would have riveted the ends, or should have riveted the ends.

XQ442 In the first place, there is no difference, really, in the action of this machine as shown in this patent as compared with any of the others, is there? It doesn't make any difference as far as the action is concerned whether that heel band is supported by clips depending from this chain or actually riveted to the chain, as far as what it does in the movement. A. Oh, yes, there is great difference between them because there would possibly be a crimping and a spoiling of the leather against the last. You have got to have motion, just as Mr. McFeely in his early patent 1,129,881 has it, and also the McFeely patent in suit.

XQ443 So you say this clip is used in this Brock patent 1,002,818 because the intention is to move the device longitudinally, adjust it longitudinally? A. To care for any motion which is necessary because of the change in radius of the heel or the shape of the heel.

XQ444 In that particular patent there is no adjustment at all, is there, longitudinally? A. I beg pardon?

XQ445 There is no adjustment of the heel band provided for longitudinally in that patent, is there? A. There is a set screw, Mr. Lyman, which is shown in Figure 3, which holds in the device, and of course there is an adjustment. There is no manual adjustment. By putting shims behind the edge you could get a slight adjustment. This is not the same as the other Brock patent, in which there is a bodily possible movement. In this one it is not manual; in the other one it is manual.

XQ446 What does this patent explain is the reason why, instead of riveting the band to the chain, as was the usual case, usually done, he connects it by these hooks

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to the chain? I call your attention to page 2 of the patent, line 24. A. Beginning at line 24, which is not the complete story—

THE COURT: —Do you want to go back to 19? That might start in there.

A. Yes; it would be better to start there.

XQ447 All right. A. (Reading): "Preferably the lower member will include a hook to extend under the lower edge of the band and, it may be, upwardly along the inner side of the band a short distance. In the latter event the band may be recessed to receive the tip of the hook. This mounting permits the ready removal of the band without disconnecting any of the parts, and allows the heel band to follow the shoe in any upward movement of the last, such for example as the usual lifting movement to compress the overwiped upper between the last bottom and the lower face of the wipers."

XQ448 That doesn't say anything about the purpose which you assigned to it, does it? A. It doesn't say anything about that.

XQ449 Now turn to the Cavanagh patent 1,130,142, please. That is another of these four patents which you cited as the closest references against these heel band adjusting claims of McFeely and as having everything contained in those claims. A. I think there was another one of Brock, but I will turn to this one.

XQ450 In this Cavanagh case is there means provided for a longitudinal adjustment of the heel band? A. In the same way; not manually adjustable but they could be changed.

XQ451 And in this case the depending clips are actually riveted to the heel band so there can't be any motion? A. That is right.

XQ452 Do you regard that as inoperative? A. I think it would possibly cause crimping.

XQ453 Did you ever see it done? A. No.

XQ454 You don't know as a practical matter then that they always are riveted? A. I don't believe they are.

XQ455 Would you be surprised to learn that? A. I do not believe as a practical matter that they always are, because Mr. Brock shows so many otherwise.

XQ456 Let us leave the Cavanagh patent for a moment and look at the Brock patent 1,002,818, which you have just been dealing with. I would like to know what happens to those members 272 shown at Figure 3 when

Testimony of Arthur M. Greene, Jr. (Resumed).

pressure is put on the band, when clamping pressure is put on the band. A. What happens to the member 272, Figure 1—

THE COURT: —No, Figure 3.

XQ457 What happens to those (indicating on witness' copy of patent) in the operation of this device? A. As the rod, not numbered, is forced inward to a crossbar, the members 282 are forced toward the top of the picture, and then the pivot, the outward motion of the pivot causes the member at the end there, of which 272 is the extremity, to turn on the pivot, and at the same time the wedge marked 284 causes also an inward motion to take place. This point 272 of course can be adjusted by the jam nuts to take different positions, dependent on the shape of the last. This member 272 moves inward and outward, upward, because of the configuration of the body around which it is being pressed; that is, the point 272 has two motions, an inward motion and an upward motion.

XQ458 And the end of the chain goes with it, proceeds in those motions? A. Yes, and going along the edges, as every chain would do, it would produce a pressure normal to the chain and it would finally end at the middle point, where the pressure would be in the longitudinal direction of the last.

XQ459 And the movement of the ends of the chain carries the heel band along with it? A. Yes.

XQ460 Will you look at the McFeely prior art patent and explain the action of those swiveled heads? Look at the patent 1,129,881, Figure 19. Tell us, if you please, what happens in the action of this device when the clamping pressure is put upon the heel band? A. In Figure 19 of patent 1,129,881 the equalizer 60 is attached through an unyielding connection back to the cam face, which causes its motion, and the side racks 59 are moved. The back stop, painted red, is held in position, adjusted to the position desired, and then the extremities of the bell crank levers 54 come inward and if, Your Honor; we should draw a radial line from this pivot down to this point, the motion of that point is inward and backward. I am referring to the pivot 53, but because of the action of this spring, which is the yielding member in this case, as required by this action, the motion of the spring is to then move the member between the center 53 and the end 51 to produce a motion that will bind and hold the band. At the same time the springs on the side adjacent to the bight force inward and produce pressure at that part of the band.

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XQ461 Then the motion of the part 51 is a rather compound motion; it starts inwardly. A. I think so, sir.

XQ462 Then— A. —Downwardly, probably, due to the spring action inside here.

XQ463 Downwardly with reference to the picture, or that is toward the operator in the actual machine? A. Yes, sir.

XQ464 Inwardly and then downwardly? A. Yes, sir.

XQ465 That is due to the yield of the spring pressure? A. Of the spring pressure.

XQ466 In this early McFeely patent 1,129,881, the inward position of the hold-down at the beginning of the cycle of movements is below the plane of the wipers; is that correct? A. That is correct.

XQ467 And the first wiping movement takes place while it is still below? A. That is right.

XQ468 Then it rises for the second wiping? A. That is right; according to the specification he describes it just in that way, Mr. Lyman.

XQ469 In the McFeely patent in suit and in the defendant's machine and the like, the initial position of the hold-down is substantially in the plane of the wipers; am I right? A. No. The defendant's machine which I have observed shows that before the band closes in by action of its cam the hold-down has positioned the last and upper for the first wipe and therefore it is below the plane; otherwise it couldn't rise about one thirty-second of an inch, as was seen when the machine operated. Just before the second wipe took place it had to be below in order to accommodate that one thirty-second of an inch rise.

XQ470 Perhaps I am not literally correct in speaking of the initial position as being in the plane of the wiper in either case, but the first motion of the hold-down in the patent in suit and in the defendant's machine is to go from an upper level to a lower level, isn't it? A. Oh, yes; yes.

XQ471 In that respect the motion is different from the old McFeely machine? A. No. The early McFeely machine does the very same thing. The initial motion is to put it downward below the level of the wipers.

XQ472 Let us begin again. Isn't this true of the old McFeely patent. The hold-down, in its initial position at the beginning of the cycle, is below the level of the

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wipers. A. I will have to read that and see, Mr. Lyman. I am not sure.

THE COURT: Is this with reference to claim 42?

MR. LYMAN: Yes, sir.

THE COURT: Are you reaching now the upwipe feature of the McFeely patent in suit?

MR. LYMAN: No.

THE COURT: I did not know the object.

MR. LYMAN: I don't know that there is much object anyway in going into that.

THE COURT: I was wondering why.

MR. LYMAN: I think perhaps, in order to shorten this, I can put it in a shorter form to our own witness, because I know he can do it without looking at the patent.

THE COURT: All right.

By Mr. Lyman:

XQ473 Just answer that question and we will pass to something else. A. (Witness examines patent.)

XQ474 Professor, don't trouble to read any more in the patent. A. This may cover the point you want to make. I am quoting from page 5, line 124 (Reading):

"It is intended that the first or essentially breaking down advance shall take place with the shoe in a lower position than the second or wiping in and ironing down movement. Accordingly, means for controlling the vertical position of the shoe is provided and is connected with means for changing that vertical position automatically between the two actuations of the upper overworking means. The shoe bottom rest 100 is formed as shown in Fig. 8 to contact with the shoe bottom at a plurality of points including points at opposite sides of the innersole near the heel breast line to position the shoe as to transverse inclination of the heel bottom and to clamp the insole down firmly upon the last bottom near its opposite edges. This bottom rest is movable endwise in a guide-way formed in the lower face of a block 102 and is pressed forwardly therein by a spring 103 against an adjusting screw 104. The block 102 is guided for vertical movement in the machine head and has rack teeth engaged by a pinion 105 coupled by a rack rod 107 to a lever 108 which is fulcrumed at its upper end and is held by a spring, 109, acting on the rack rod, against a cam face 110 formed on

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the front end of the cam block 65. This cam face is formed with relation to the cam track 75 for the bottom rest to be raised between the first and the second advance of the wipers so that the shoe may come up to the level of the wipers before their second advance, whereby the upper is caused to be firmly wiped or ironed down upon the last bottom to form a firm, smoothly lasted heel seat. The lifting of the shoe is effected by the strong spring 45 located in the jack lifting mechanism which is put under tension when the jack is locked up. The cam face 110 is also formed to depress the bottom rest again after the tacks are driven, as will be described, and before the wipers are finally retracted. This is to depress the shoe from the wipers and to relieve the pressure of the wipers and prevent them from dragging over the lasted and tacked upper in their final retraction."

It does not state what the initial position is, and this patent to McFeely 1,129,881 does not give any cam track, so that the preliminary position of that hold-down is not shown.

XQ475 But the first motion of the hold-down is an upward motion. A. Not necessarily. It is between those two wipes, but what has happened before that is not definitely given.

XQ476 Did I understand you to suggest, Professor, that the McFeely patent in suit indicates that there is a retraction of the wiper just preliminary to the tacking operation? A. The wording of the patent is that, but there is no retraction. As I explained to the court, the last motion, the half motion which goes inward carries both the tackers and the wipers together, the tacker in advance of the wiper, so it stops and the tacks are driven. The wording of the patent speaks in the specification as if there were a withdrawal. It means only this half-stroke, and during that last half-stroke—

MR. LYMAN: —The passage to which the Professor directed attention is on page 6.

THE COURT: That is of the patent in suit.

MR. LYMAN: Patent in suit, page 6, line 100 or thereabouts, where it says "to limit the cam actuated forward movement of the unit 234 bodily with the block 224, determinately to position the tacks beyond the inner edges of the wipers when the wipers are partially withdrawn rearwardly for the tack driving operation." As

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the professor explains, all that means is that when they are in a partly withdrawn position they have not come forward and gone back, as in the early McFeely patent.

THE COURT: In the early McFeely patent there were two complete wipings and no retraction when the tacks were driven.

MR. LYMAN: No. The prior art McFeely patent, of which we saw this model here yesterday, there is a retraction each time.

THE COURT: Yes, but I mean there are just two complete wipings in the early McFeely patent, and in the McFeely patent in suit it is two complete wipings, then the half-wiping with the tackers in advance of the wiper.

MR. LYMAN: That is right.

By Mr. Lyman:

XQ477 I wish now, Professor, that you would look at the Snow patent 946,708. That, I believe you said, embodied all the elements of claim 19 of the Hoyt patent. What is the action of those members which—

THE COURT: —Will you refer to the figure?

XQ478 —Figure 3, Your Honor, I am referring to—those links at the forward end of the heel band structure.

A. What was the question, please?

XQ479 What is the action of these things at the forward end of the heel band structure? A. The part 4, Your Honor, which is colored yellow, is the band, and then we come to the outer connection, which is pivoted to the member 12, which is then connected to the side rod 16, which is moved downward in this picture by the crossbar 20 and the rod 24, and in its downward motion there is the same wedge action spoken of a few minutes ago in connection with the Brock patent, which forces the pivot inward. The motion is such that the pivots cooperate with these equalizers and bars and the central pressers to permit an inward motion at the same time the pivot is forced downward, clamping the band.

XQ480 The pivot changes from the position shown in dotted lines? A. Yes, sir.

XQ481 To the position shown in full lines when the clamping pressure is applied? A. On the two sides, yes, sir.

XQ482 Do you consider those yielding or unyielding connections at the forward end of the heel band? A. Those would be unyielding connections in that they are supposed to be materials of proper strength to maintain the various lengths between pivots.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ483 What about the presence of the springs 14?

A. That is merely a retractor to maintain the parts. As in most of these patents which we have looked at, there has been a spring to maintain the relation, but during this driving action that spring has no function; it is determined entirely by the lengths of the various members.

XQ484 Does the fact that these two arms are connected to that member 20, are driven by this member 20, which is, I suppose, an equalizer, affect the unyielding nature of the action? A. These are all parts which do not change in length, and my understanding of "unyielding" as used in this case means that, that is, there are parts in all of these devices which are pivoted and between which there may be relative motion of rotation or even of translation, but the lengths definitely do not change appreciably. That is, when I am saying that you can't stress a body the least bit without changing its length, but that is a mere quibble. The lengths normally do not change.

XQ485 That bar 20; you call that an equalizer bar?

A. I call it an equalizer, since you seem to do that.

XQ486 The idea is that there may be more resistance temporarily on one side than the other. A. This picture, Mr. Lyman, Figure 3, shows that very thing. If you notice that configuration on the bottom, that on the right is entirely different from that on the left.

XQ487 I understand. Now with reference to these curved members 30, are they—

THE COURT: —32.

A. 30—this lead line comes in at 30.

XQ488 With reference to those members 30, the action of that wedge 35, which drives them, is again an equalizing action, isn't it? A. Yes, sir.

XQ489 Just the same as the action of the other— A. —These parts are according to the patent filled with equalizing devices.

XQ490 So that you have an unyielding pressure applied both by these arms 30 and by the forward pressure links at the end of the band? A. The wording is that these are yielding members and the walls of the curved slots engage the fixed studs 33 "and press against the shoe at the corners of the last, whereby the upper materials are pressed inwardly and securely held against springing away from the corners of the last", showing that these press inward. They are yielding and are free to move.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ491 Why are they yielding, Professor? A. On account of their length, primarily.

XQ492 What lengths? A. The lengths of those members and also—

MR. TOULMIN: He did not hear you, Mr. Lyman.

XQ493 Why are they yielding, Professor? A. Because of their lengths and because of the freedom of movement from side to side they yield to pressure greater on one side than on the other.

XQ494 You mean on account of that wedge action? A. Wedge action and slots and also on account of the length of members, for the resiliency.

XQ495 Where does the patent say anything about those members having resiliency? Does the patent say anything about those members having resiliency? A. I think it does. I will see if I can find it. I may not be able to find it. (After examining patent): No. I think the quotation I gave is the best answer to that question. It is not definitely mentioned.

XQ496 In other words, you say the only description of them is that they are operated upon by this equalizer wedge? A. Yes, sir.

XQ497 And therefore they would be unyielding. A. They would be free to move.

XQ498 They would be unyielding. A. No, they would not be unyielding, because you see in the others the pressures are lengthwise. Here you have beam action and the pressure which is perpendicular, and the connection of member 30 to the chain is so long that we have a springing action there. That is a yielding member and also a springy member, a resilient member.

XQ499 You are reading something into it. Those are rigid members. A. No, they are not rigid for transverse motion, and I have not said so.

XQ500 Your explanation then is that you assume that those members 30 are built of some material so that they will yield. That is your whole answer. A. In the drawing as laid out in this patent, Figure 3, they definitely are yielding members.

XQ501 This patent, professor, which you have cited as the best answer to claim 19 of the Hoyt patent, this Snow patent which you rely upon as the closest anticipation, was not cited by your counsel in their bill of particulars against this claim at all. A. That is right.

XQ502 Will you please refer to the Pym patent?

THE COURT: Suppose we recess at this point.

Thereupon a short recess was taken, after which

Dr. Greene

resumed the witness stand and testified further,
as follows:

MR. LYMAN: I am now, Your Honor, still talking about the Hoyt patent.

THE COURT: Yes.

MR. LYMAN: And I have asked the witness to direct his attention to the Pym patent, which he said was the principal reference against claim 21 of Hoyt and which he said embodied all the elements of claim 21 of the patent.

By Mr. Lyman:

XQ503 Claim 21 of the Hoyt patent, Professor, refers to "means for supporting the heel band" indicated at 140 in Figure 2 of the patent, "devices comprising arms loosely mounted on the supporting means"—those are the arms 242 which are mounted upon the back stop of the device; that is one of the supporting elements which supports the rear of the band—and "means normally operative to press said devices against the band." That latter element refers to the spring pressed plungers 242, Mr. McNulty?

MR. McNULTY: 244 on one side and 246 on the other.

MR. LYMAN: No; the spring pressed plungers I am talking about.

MR. McNULTY: 248 and 250, as shown on the drawing.

By Mr. Lyman:

XQ503 (Continued): 248 and 250; is that right? A. The reading of the elements is correct but your numbers referring to those are not correct.

XQ503 Let us correct them then. The loosely mounted arms are these arms 240, 242. A. Mounted on the supporting means, and the supporting means is the thing to which they are mounted; therefore the supporting means is at that point and not at 140.

XQ504 I did not indicate 140 as the supporting means. A. I beg your pardon. I think the record will show you mentioned 140. I followed the record carefully.

XQ505 Pardon me, Professor. All I wanted to designate by 140 was the band itself. The means which are normally operative to press these arms against the band

Testimony of Arthur M. Greene, Jr. (Resumed).

are these spring pressed plungers 248 and 250. A. That is correct.

XQ506 And they operate all the time to press these arms inwardly against the band? A. According to the claim and specification, yes, sir.

XQ507 So as to provide a yielding cushion whenever the shoe is forced in there against the heel band. A: Well, it is to force—the words of the claim are to force the—Well, I will read it—“means normally operative to press said devices against the band.” These are the loosely mounted arms against the band, so they press these loosely mounted members against the band.

XQ508 And the result is that you have a springy cushion when the heel is jammed into the band. A. Not because they are forced toward the band but because they are there.

XQ509 They are pressing against it. A. That is, those springs or that action which you speak of, not because they press toward the band but in this particular thing they press toward the shoe, in Figure 2 of the Hoyt patent 1,508,394.

XQ510 That is what you mean by the expression “normally operative”; that is, they are there doing their work all the time? A. No, against the band. Anything which presses those devices, those handles against the band would meet this claim, in my mind—this element of the claim.

XQ511 I am speaking particularly of the word “normally”. That means they are there all the time. A. All the time, yes.

XQ512 I wish you would refer to the Pym patent, 1,368,968, and I think the figures to which you particularly directed attention were Figures 9 and 10. A. That is correct. It should be 11. I am referring to Figure 11 because those are the adjacent ones to the band. Figures 9 and 11.

XQ513 Am I right in my understanding of this Pym device, Professor; in what I now say? There are arms 79 which are pivoted on a supporting member 81. A. Yes, sir.

XQ514 And they are free to swing, opening the arms, like these loosely mounted arms 240 and 242, of the Hoyt patent? A. That is right, sir.

XQ515 Mounted in those arms are these plunger elements which we see more in detail in Figure 10. A. No, Figure 11.

XQ516 First, Figure 10.

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: One-half is 11 and the other half is 10. A. The Figure 10, Your Honor, refers to the end members which are shown out at the extreme end of the arms. The part to which I am referring is the member which is shown in Figure 11.

XQ517 I will come to Figure 11 in a moment; Professor, but these swinging arms do carry these spring pressed plungers such as is shown in Figure 10, three on each side, toward the front end of the band? A. That is right, toward the front end.

XQ518 And at the rear end of the band there is a construction such as shown in Figure 11, in which we have a spring which surrounds a screw which enters the band itself and which tends to hold that band back against the arms 79 at the rear. A. Normally that spring holds the band against the arm, which is mounted freely on the support 81.

XQ519 These arms 79, except when the operating bars 101 force them forward, swing open like my arms now (demonstrating) under the influence of those springs 100; is that right? A. That is correct.

XQ520 So that the normal position of those arms when the clamping pressure has not been applied is open? A. Yes, sir.

XQ521 And with them, as they open, they carry the band. A. That is right.

XQ522 The band is extended wide open. A. That is right.

XQ523 In the normal position. And when the clamping operation takes place these arms are forced in and they carry with them the band which they enclose. A. That is correct, sir.

XQ524 And in that case, instead of having swinging arms they are pivoted on the support so that they move freely and pressure members abut up against them to keep them at all times pressed inwardly. We have in the Pym device pressure members which are inactive until the—which are carried by the arms themselves and they are inactive except as the arms close. A. No, the springs are always active and normally hold the band against this movable arm 79. They are never inactive. Those are always active springs.

XQ525 You are talking about the springs on Figure 11? A. Figure 11, yes, sir.

XQ526 And what these do is to take hold of the band at the rear and hold it back bodily against the support. A. They hold it against these loosely mounted arms.

Testimony of Arthur M. Greene, Jr. (Resumed).

XQ527 Hold it back, yes. All right. You said at one time in your direct-examination that the Model A machine was like, in function and performance, the machine shown in the early McFeely patent, that is, the prior art patent to McFeely, Number 1,129,881. You did say that, didn't you? A. In using your interpretation of the action and the claim.

XQ528 In making that statement you were merely saying that the machine shown in the McFeely patent in suit is like, in function and performance, the old McFeely patent. A. As far as claims 6, 85, 23, 91 and 42 are concerned, as you have interpreted them.

XQ529 You were not attempting to draw any distinction between the Model A machine and the McFeely patent in suit. That is the point I have in mind. A. My understanding is that the Model A is the McFeely patent in suit. That is my understanding.

XQ530 Yes. I simply wanted to make that clear. It was not clear to me, and I did not know whether it was to Your Honor, what the witness meant when he made that statement. You spoke about a certain jam nut on the Model A machine, and I don't know what your point was about that, Professor. I believe you made some point about it. I wish you would state it. A. The point about it, Mr. Lyman, is that the means for manual adjustment, which is the arm which limits the amount of motion of the hold-down, was moved far back and for some reason, maybe that it would not be adjustable by any of us—I don't know—but there was a jam nut placed in front of that so we could not vary the hold-down adjusting nut for adjusting the amount of motion of the initial position. Why it was done I don't know, but it seemed rather strange that a machine which should have an adjustment on it which is mentioned in claim 42, should have had an operative adjustment in the presence of the court to make it operative, you must apply a wrench to take that nut off.

XQ531 That would not be very hard for you to do. A. No it would not. Why it was done I have no idea.

XQ532 Would you impute any sinister motive to that? A. It seemed strange. I don't know why it was done.

XQ533 You may take it off. We have no objection. A. While I was there I asked if it could be adjusted, the amount of hold-down.

THE COURT: It is out of this case, isn't it?

MR. LYMAN: Not the matter of the adjustment of the hold-down.

Testimony of Arthur M. Greene, Jr. (Resumed).

THE COURT: As far as it affects the upwiping?

MR. LYMAN: I did not know what the professor said, what his point was about this jam nut.

THE COURT: While we are on the subject—or are you coming to it—there was a suggestion of course that the early McFeely patent anticipated this Hoyt patent too.

MR. LYMAN: Yes. I was going to deal with that with our own witness, Your Honor, to shorten it.

THE COURT: The only reason is Mr. Kath, and I think Professor Greene, the other day suggested that.

MR. LYMAN: They did; at least, Professor Greene did, and I had that in mind, but I thought I would not take too much time in cross-examination.

THE COURT: All right.

MR. LYMAN: However, I will be very glad to do that. I was intending to take that up through Mr. McNulty in answer to that position, but I will be very glad to get the Professor's views again on that. The McFeely patent in suit, Your Honor—he said the McFeely patent in suit anticipated the Hoyt.

THE COURT: If he said the one in suit, that is all right. I understand it.

By Mr. Lyman:

XQ534 It was the one in suit you suggested. A. I suggested that you might include the early one too; but the one in suit is the one I particularly referred to.

THE COURT: All right.

MR. LYMAN: That has all been discussed. I think we have the position of both parties on that. That is all.

REDIRECT-EXAMINATION

By Mr. Toulmin:

RDQ1 Will Your Honor indulge me by turning to those charts S, T and A-1? Dr. Greene, will you refer to the Defendant's Exhibits S, T and A-1, which were the subject of some cross-examination, and tell me, if the operating member 188 of the patent in suit is correctly so termed, whether or not those charts in your hand are correct or incorrect so far as that operating rod questioned by the other side is concerned? A. They undoubtedly are correct in all three of these exhibits, S, T and A-1.

RDQ2 And again assuming that the plaintiff's interpretation that the operating member is the equalizer 188, what have you to say as to the patents represented

Testimony of Arthur M. Greene, Jr. (Resumed).

by the exhibits S, T and A-1 being anticipation of the claims to which you applied them? A. As far as the clamping means is concerned, and with the unyielding member, they are perfect anticipations.

RDQ3 What claim are you referring to now? A. And I have also testified that the Snow patent 946,708 is a complete anticipation of all of that claim 19 of the Hoyt patent.

RDQ4 With reference to claim 42 of the McFeely patent in suit and the prior art as to that patent, upon which you were cross-examined, will you call the court's attention to the particular prior art patent or patents which you rely upon as to claim 42 so that I can ask you a question? A. The best reference to claim 42 is the early McFeely patent 1,129,881. The Pym patent 1,138,968 is the second one. For particular features of this claim we have referred also to the Cavanagh patent 1,130,142, the Merrick patent 1,245,117, and the Plant patent, 958,280.

RDQ5 Now, Dr. Greene, there was some question whether one of those references, or several of them, had all of the elements of claim 42 and, as I recall it, there was a statement that one or more of those patents did not have all of the elements of claim 42. Will you explain that clearly, so we will have no misunderstanding? A. If the court please, the question which was asked me in my cross-examination was, was there any patent which contains all the elements of the patent in suit to McFeely, and I answered "No" correctly, because the element varying the hold-down is not in the McFeely nor Pym. It is a common feature, as indicated by the Plant patent and the Merrick patent, but it is not in these other two patents.

RDQ6 And you are referring to the last element?

A. And therefore I had to answer it in that way.

RDQ7 And you are referring now to the last element of claim 42? A. The last element, which refers to the element varying the amount of motion of the hold-down.

RDQ8 Which is defined in the claim as "manually adjustable means for determinately varying the amount of vertical movement of the hold-down"? A. That is correct.

MR. TOULMIN: We rely upon the doctrine established by the Court of Appeals in the Edwards case, that you don't have to find all the elements of a claim in the construction of the prior art.

Testimony of Arthur M. Greene, Jr. (Resumed).

By Mr. Toulmin:

RDQ9 With reference to the bed laster patents which have been mentioned here, both those operated by cams and those fully operable by hand, would you say as an engineer, if you were designing the McFeely patent in suit or the Hoyt patent in suit, that you would ignore those patents as to any teachings in them of value or of construction in making the design? A. No, I would not ignore any of the things.

RDQ10 Tell the court your reason for making that statement. A. Your Honor, my idea of automatic action is action which takes place of itself after a particular setting, and in the prior art to which we have referred in this trial there have been certain adjustments for the amount of motion of band or wiper, and in designing a machine of any kind I would endeavor to find out what had been done before and appropriate that, if I could, which means that if it were protected by a patent I would have to get something which would not meet the claim; but I would be very foolish to forget anything which had gone before the time of my design. And if I couldn't design something to overcome a patent claim I would have to go to the owner of the patent and secure a license if I wished to use his device. But, in any investigation, a scientist, an engineer, is exceedingly foolish if he does not search the literature to find out the conditions of his problem as determined by previous investigators and then carry on his work from that point.

RDQ11 Now, Dr. Greene, as I understand your testimony both on direct and cross-examination, with reference to the first McFeely patent you stated that there was a means, an automatic means to predeterminately adjust the position of the wipers; is that correct? A. That is correct, yes, sir.

RDQ12 Dr. Greene, speaking as an engineer, will you say it was within the range of an engineer to substitute for the automatic adjusting means of wipers of the first McFeely patent a hand or manual adjusting means for adjusting the position predeterminately of the wipers, as in the second McFeely patent?

MR. LYMAN: That is a question that is obviously inadmissible, Your Honor. That sort of question is for the court and for the court only.

MR. TOULMIN: Not at all. The court is basing his decision—

THE COURT: —I think the objection is well taken. You may proffer it.

Testimony of Arthur M. Greene, Jr. (Resumed).

MR. TOULMIN: No, Your Honor, I won't do that.

THE COURT: All right.

MR. TOULMIN: I think the point is clear in Your Honor's mind so you can decide it.

By Mr. Toulmin:

RDQ13 Now, Dr. Greene, let me go to one more question. As I understand it, in the first McFeely patent you have an automatic predeterminedly adjusting means for the wipers, and in the second McFeely patent you have a manual means for adjusting the position of the wipers. Are those facts correct as to those two patents? A. I should say in each of them there was a manual adjustment of the position of the wipers through the strong spring in the early McFeely and through the independent bar 244 and nut 298, as well as the ratchet wheel 270.

RDQ14 Will you point out that on the first McFeely patent to which you refer? You need not get the large chart—just on the patent. A. In the early McFeely patent the co-operation between the strong spring (indicating to the court)—

MR. LYMAN: —Could I see what you are looking at? A. Yes. Figure 13. The cooperation between the strong spring, which I believe is numbered 88, its base, the bar 283 with its inclined edge, the cam slot 284 and 842 and the pin 840, together with the hand wheel—No, not the hand wheel—together with the sliding end bar on the side, which has a similar cam slot and pin, the manual adjustment of this combination is the pressure plug which acts on the heavy spring 88. Then I also said that the placing of the last with its upper within the machine, because of the hanging members which come out from the fackers and produce some of this pressure movement, that position of the last itself is also a manual method of adjustment. That was my position on my various examination.

RDQ15 All right, Dr. Greene. Now one more question and I think we will be done, Your Honor; I think it is helpful to clear up these points. With reference to the question of the heel band, upon which you were examined this morning, I wish you would refer to the Brock patent 1,188,616, and the exhibit M-1. Will you tell me, with special respect to Figure 9, which illustrates the heel band itself, whether you find any difference between the construction of that heel band and the heel band of the plaintiff in this case in the McFeely patent? I

Testimony of Arthur M. Greene, Jr. (Resumed).

call your attention to the slots 84 and the back slot and other features. A. In the patent in suit we have a heel band which is carried by a back support which is adjustable through the member 92, 94, just as in Figure 10 we have an adjustment for the rear end of the band, a chain. In Figure 9 we see the groove into which the hook at the bight of the band rests. Then we have in this Figure 4 of the patent in suit a spring connection on the side before we get to the end supports, just as in this patent 1,188,616 we have the tangential pressure—not the tangential pressure but the radial pressure from the band 88. We then come to the end of the figure and we note in Figure 9 the grooves which are arranged to take the hook shown in Figure 10 to permit of motion which might occur between the chain and the band as it changes its radius of curvature. The patent specification of 1,188,616, distinctly calls for a resilient band made of some substance which would yield and cause the band to conform to the shape of the last. Now, if we go to Figure 4 we again see the end supports, which take the place of the hooks at the end of these Figures 9 and 10.

RDQ16 Do you find, Doctor, in this Brock patent 1,188,616 the feature inquired about, of having a sliding support for the outer ends of the heel bands? A. We do.

MR. TOULMIN: That is all.

RECROSS-EXAMINATION

By Mr. Lyman:

RXQ1 Doctor, here is a model of the tacker-wiper construction of the early McFeely patent which was introduced in evidence yesterday and explained by a witness in your absence (referring to Exhibit No. 35). Here is a model of the Model D machine. Let us see you, please, perform the manual adjustment of the wiper position to make it conform with the contour of a shoe, which is contained in this mechanism Exhibit 8-B.

THE COURT: You want him with this exhibit of the early McFeely patent (Exhibit 35) to perform the manual adjustment on here that he can on there (indicating Exhibit 8-B).

MR. LYMAN: That is it.

MR. TOULMIN: I want to call the witness' attention to the fact that he did not hear yesterday that the witness identifying this Exhibit 35 of the plaintiff said

Testimony of Arthur M. Greenie, Jr. (Resumed).

the light springs in the exhibit were not the true springs to be used.

A. May I call attention of the court, before attempting to adjust this, that this is not the McFeely patent. This is Model D, which is quite different from the McFeely patent. I could explain how I would adjust it from the drawing of the patent but I would rather not—I couldn't because it has not all the elements.

By Mr. Lyman:

RXQ2 All right. Do it then from the McFeely patent (placing drawing before court and witness). Going to the McFeely patent, how would you perform that preliminary adjustment of the wipers to the contour of the shoe which these claims call for?

MR. TOULMIN: Do you mean the McFeely patent in suit?

RXQ3 The McFeely patent in suit, claims 6 and 85.

A. Your Honor, I would determine first of all the position to which I wished the jack to go, so I would adjust the support of the heel band, bringing it either forward or backward. I would then determine the amount of tacking space which I would like beyond the edge of the wiper, and I would do that by positioning—and also from the edge of the shoe—I would do that by positioning this arm which is secured to the frame, but not rigid so that I would limit the amount of motion of the tacker. Now, as I call the attention of the court, the relative motion between tacker and wiper is fixed by the length of this slot and the position of that member. I would then go over here and again determine the position at which I wished my tacks driven and so would adjust this piece (indicating), which has nothing to do with the driving mechanism. It is only the determining method, just the same as this member (indicating); it has nothing to do with the driving. Then I would go down here and turn the handle to 70, which would move this end tacker and wiper inward, and, as I called attention of the court, these two member are so placed that the tackers are always beyond the wiper, and as they close in there is relative turning between these two members. Having done that, I would then go through the operation which Mr. McFeely has indicated in his patent specification. But that is the preliminary adjustment.

MR. LYMAN: In other words, if Your Honor please, the preliminary adjustment that the patent contem-

Testimony of Arthur M. Greene, Jr. (Resumed).

plates is this movement of this ratchet which swings in the wipers to the contour of the shoe it is desired to operate upon. Then the machine is operated.

THE COURT: Then it is set.

By Mr. Lyman:

RXQ4 I ask you, Professor, now to take this model Plaintiff's Exhibit 35 of the early McFeely patent and preliminarily adjust the position of those wipers to the contour of a shoe, manually do it. A. In this—

RXQ5 —Do it, please, and then explain how you are doing it afterwards. A. I am not familiar with the machine so I may make slips. I could do it from the drawing, Your Honor.

THE COURT: I suggest that in view of the fact the Professor was not here yesterday he be given some description of how it works.

MR. LYMAN: He has examined it.

A. I think I know how it works. I would also in this determine the position of the hold-back relative to the position of the machine, the jack.

RXQ6 Please confine yourself to how you are going to preliminarily adjust the position of the wipers in this machine.

MR. TOULMIN: Let him answer.

A. Your Honor, you can't do that without that, I am saying, and I think I should be allowed to explain it.

THE COURT: Go ahead.

A. Your Honor, as I told the court in my explanation, that the position of these dependent members from the tackers—

RDQ7. —Feelers. A. These feelers, if you call them so, 122, come against the jack—not the jack but the last, and consequently the position in which you put this last determines the final position of the tackers and wipers because of that operation.

THE COURT: That conforms to your testimony about the automatic operation in this earlier patent in your cross-examination this morning. You say your testimony here as to this machine conforms to—

MR. LYMAN: —Copeland, you mean?

THE COURT: Yes.

MR. LYMAN: Copeland manually can be operated and carries it as far as he wants to. Here the machine carries it until that stop stops it.

THE COURT: The testimony here conforms to the testimony this morning about the Copeland patent.

MR. LYMAN: Yes.

Testimony of Arthur M. Greene, Jr. (Resumed).

A. Then we would adjust, according to the teachings of McFeely, the tightness of this spring which acts on the flanged edge and determines the relative amount of motion of the wiper and the tacker, and as a result also determines the amount of motion of the tacker. Then with the last in position, in properly selected position and the nuts at this point and this point and this point (indicating) tightened to the degree at which I would like to have the machine operate, I would start operation and it would operate as required by the co-action of these various parts.

By Mr. Lyman:

RXQ8 Professor, if you screwed these down, these plungers down to the utmost degree, compressed that spring to rigidity, would it move your wipers? A. I think it might, yes, sir.

RXQ9 At the start? A. No, not at the start.

RXQ11 We are talking about a preliminary adjustment of wipers. A. For the final condition.

RXQ12 For the final condition. A. This is the preliminary condition of the wipers.

MR. TOULMIN: Witness points to nuts.

A. The motion of fixing the wipers is a preliminary adjustment.

RXQ13 Would that movement, pressing these plungers down to the limit, move these wipers originally? A. No, no.

RXQ14 You suggest that a preliminary adjustment is possible of this machine because you can put different sizes of shoes in there? A. Yes, I do.

RXQ15 You think that is an adjustment? A. Yes, I do; yes, indeed.

RXQ16 And you think because you can put different sizes of shoes in there you have gotten an adjustment of the machine. A. That is the purpose of this patent, to care for such changes in sizes of shoes.

RXQ17 And that, too, the wiper will never hit the shoe until the power stroke comes. A. That is correct.

RXQ18 Is there a hint in the old McFeely patent about any of these theories you are suggesting as to preliminary adjustment of the wipers? A. Yes.

RXQ19 One hint? A. Yes.

RXQ20 Where do you find it? A. I will be very glad to give it to you.

RXQ21 One hint about any preliminary adjustment—that is what I am speaking of—prior to the power stroke,

Testimony of Arthur M. Greene, Jr. (Resumed).

any adjustment of the position of the wipers preliminary to the power stroke in the apparatus shown in that patent. A. The complete quotation would start from page 6, line 117. If you wish all of this placed in the record I can read it.

RXQ22 Yes, I guess you had better read it. Anything that shows a preliminary adjustment of the wipers I certainly want to know about. A. We have read this, Your Honor.

THE COURT: The question is now—it is concrete and it is suggesting one definite point. The suggestion of the question is, is there any suggestion of preliminary adjustment in the original McFeely patent?

MR. LYMAN: That is right, Your Honor, of the wipers.

A. Your Honor, my point is, my position is this—

By Mr. Lyman:

RXQ23 —That question could be answered "Yes" or "No".

THE COURT: Yes. Then you can explain.

A. I would answer it yes, and my explanation is this, that on tightening these devices you make a preliminary adjustment of the system, including the wipers, and make the wipers— And, by the way, the tightening of the spring and the placing in of the shoe preliminarily sets this machine so that it wipes just as you want it. It is done preliminary to the working of the machine. If you mean that there is moving of the wiper before the machine moves, there is none. If preliminary adjustment means so that the wipers actually move, there is none in this patent.

THE COURT: And that is a fair comparison now with the McFeely patent in suit?

A. Yes, sir. And in my mind the preliminary adjustment of the wipers means the wiper mechanism. Of course, if it does not, you can go to so many in the prior art where the actual shape of the wiper is changed either by moving the end bodily or by screwing a little piece in, or by taking, for instance, the Pym patent. If preliminary adjustment means that you move it before the wiper is moved by power, this of course does not have it but Pym has it beautifully. So does Eaton, which is a very early patent. If preliminary means that, that preliminary is not here, but there is a preliminary adjustment to operate the wipers as they should be operated, and that adjustment is the tightening of the screws and

Testimony of Arthur M. Greene, Jr. (Resumed).

the use of the last with its shoe. That is the position I took in my direct and cross-examination.

MR. LYMAN: No further questions.

MR. TOULMIN: May I call Your Honor's attention, for the sake of accuracy, that in claim 6 there is no mention of preliminary. It says "determinately."

THE COURT: Predeterminately.

MR. TOULMIN: It does not use the word "predeterminately." I suppose it means the same thing.

THE COURT: Yes.

MR. TOULMIN: And will you mark on the first McFeely patent—before I close my case—one sentence while we are on the subject?

THE COURT: Yes.

MR. TOULMIN: That is 1,129,881.

THE COURT: Page 5.

MR. TOULMIN: Yes, page 5, and mark lines 20 to 24. The purpose of that is it mentions the predetermined adjustment.

MR. LYMAN: Predetermined adjustment of what?

MR. TOULMIN: You can read it.

THE COURT: Give me the place again.

MR. TOULMIN: Page 5, lines 20 to 24. We will cover that in our argument.

Now, if the court pleases, defendant rests.

At this point a recess was taken until 2:00 o'clock in the afternoon of the same day, Wednesday, January 24, 1939.

AFTERNOON SESSION,

WEDNESDAY, JANUARY 24, 1939.

Court met pursuant to recess, counsel being present on behalf of both parties.

MR. LYMAN: If Your Honor please, there has been testimony about that adjustable stop, and it may or may not be necessary for Your Honor to ultimately resolve it. It will be a question of argument. But it concerns claim 42 only and I think we want to put on Mr. Condon, who is present, and also Mr. Ryan on that point.

Thereupon,

George V. Condon,

called as a witness on behalf of plaintiff, in rebuttal, having been first duly sworn, testified as follows:

Examined by Mr. Lyman:

Q1 What is your name? A. George V. Condon.

Q2 Where do you live? A. Roslindale, Massachusetts.

Q3 You are employed by the United Shoe Machinery Corporation? A. Yes, sir.

Q4 And have been for a long time? A. It is twenty and a half years now; this last period.

Q5 And you are in the service department; that is, you go around on the road to iron troubles out in connection with lasting machines? A. Throughout the country.

Q6 You went to the factory of the Williams Manufacturing Company with Mr. Ryan in December, 1936, didn't you? A. I did.

Q7 Now I am going to just ask you what your recollection is as to the presence on that machine when you saw it of this adjustable abutment behind the hold-down operating lever.

MR. TOULMIN: I object, Your Honor. That is proper prima facie testimony. They had one witness on it. If they wanted to call the gentleman, they should have called him and given us an opportunity to rebut what he said. They now come in on this rebuttal testimony and our fact witnesses are gone. We have no way of rebutting this proposition.

THE COURT: I have a distinct recollection of the strap. This concerns the so-called strap attached by Mr. Bender.

MR. TOULMIN: That is right.

THE COURT: He may proceed. You may have an exception.

Q8 What is your recollection as to whether that adjustable stop was there or not, Mr. Condon, when you saw the machine with Mr. Ryan. A. I firmly believe it was.

CROSS-EXAMINATION

By Mr. Toulmin:

XQ1 Did you make any record, sketch, drawing or anything to show what the construction was at the time you inspected the machine? A. I made no records of anything.

Thereupon Mr. Condon retired from the witness stand and

Thomas J. Ryan,

recalled as a witness on behalf of plaintiff, in rebuttal, having been heretofore duly sworn, resumed the stand and testified further as follows:

By Mr. Lyman:

Q98 Mr. Ryan, you have heard the testimony of various witnesses about the matter of the adjustable stop on the defendant's machine when you saw it at Portsmouth. I am simply going to ask you whether, in view of that testimony, you have anything to say that will change your original testimony. A. No.

Q99 Your original testimony is correct? A. It is correct.

Q100 One other question, namely, what was it? A. There was an adjustable abutment on the machine for the hold-down.

Q101 One other point. Some reference has been made to features that are present on the Model D machine which is shown in that Jorgensen patent. Were there models previous to the Model D of this heel seat laster which did not contain those features—Model B? A. A Model B machine, yes, sir.

Q102 Did the Model B laster have the Hoyt improvement, so-called? A. It did.

Q103 In the Model B did the machine tack through the wipers or was it like the Model A? A. The Model B was like the Model A in that respect.

Q104 Was that machine sold to a large extent? A. Yes, some three hundred and sixty-four put in use in this country by the United Corporation.

MR. LYMAN: That is all.

MR. TOULMIN: No cross.

Thereupon Mr. Ryan retired from the stand and

Peter C. McNulty,

recalled as a witness on behalf of plaintiff, in rebuttal, having been heretofore duly sworn, testified further, as follows:

By Mr. Lyman:

Q80 You have listened to the testimony of Professor Greene in this case. A. I have.

Q81 Is there or is there not in the defendant's machine an arrangement in which the tacking units co-operate with the wiper plates?

Testimony of Peter C. McNulty (Rebuttal).

MR. TOULMIN: We object, Your Honor. They went all over that extensively with this witness in their prima facie case.

THE COURT: There is some question here as to the relativity of the motion and the cooperation.

MR. LYMAN: I just asked that plain question. It may have been asked before but I want to make sure this witness's position is on the record.

THE COURT: He may answer.

A. There is cooperation between the tacking and wiping units in defendant's machine.

By Mr. Lyman:

Q82 With reference to claim 85 Professor Greene called attention to one phrase of the claim which he thought was not readable upon the defendant's machine, namely, the expression "additional power means for subsequently operating the wipers". Is it your opinion that there is such additional power means for operating the wipers in the defendant's machine?

MR. TOULMIN: We object. That is a matter of opinion for the court, I think.

THE COURT: Yes. I think that yesterday I asked the question of you that in that preliminary adjustment by hand—I think that that is the first part of claim 85 of this—in the combination of means described plus the additional power means, and I think it was your suggestion that what was intended was that after the preliminary adjustment, when the power stroke threw the cam again on that, that was the additional power means.

MR. LYMAN: Yes, sir.

THE COURT: Of course, as I say, it is a question of interpretation. I think for the purpose it is understood, and the objection may be well taken.

By Mr. Lyman:

Q83 May I then just ask this question of the witness: Is there any substantial difference in regard to that matter as between the machine shown in the McFeely patent itself and the defendant's machine? A. There is not only no substantial difference but the parts which in Exhibit 16 of the McFeely patent, enlargement of Sheet 3, the parts which are colored violet and perform the initial adjustment later move with the power operated parts on the power stroke of the machine.

THE COURT: That is just a question of interpretation.

Testimony of Peter C. McNulty (Rebuttal).

MR. LYMAN: Only one thing I will point out—that in that argument the Professor made with reference to the defendant's machine it would also apply to the very patent itself.

THE COURT: I understood Professor Greene's theory was there was just one power stroke, just one power stroke and no additional power means in there.

MR. LYMAN: He had some theory about how, when you undertook to move a certain rack or segment there which did the manual adjusting of the rest of the apparatus, it took part in that adjustment simply because it stood still. That was the theory that he announced.

THE COURT: Yes. What he meant, the substance of his testimony so far as 85 is concerned, was that there was no additional power means.

MR. LYMAN: That is what he said.

By Mr. Lyman:

Q84 Now briefly, Mr. McNulty, with reference to this Copeland patent of the prior art, Number 244,714. You have examined that patent and studied it, haven't you? A. Yes, sir.

Q85 You have studied, as a matter of fact, all the prior art references which have been put in evidence and cited by the defendant, have you? A. Yes, I have.

Q86 This Copeland reference was so fully gone into this morning, Your Honor, that I don't believe it is necessary to go further by way of explaining. I will ask you simply whether in that Copeland patent there is described in the patent or is any means for effecting a preliminary adjustment of the wipers to the contour of the shoe and subsequent means for operating the wipers for their effective stroke. A. No, there is not, and the parts of the specification, page 2, lines 100 to 109, that were read this morning, simply means, Your Honor, that if you are lasting the toe end of the shoe, as shown in the drawings, when you move forward to cause the swinging closing movement of the wipers, the opposite end upon which the heel wipers are located are by that act retracted from their former position, open, and then if you turn that portion around for the heel operation next then the wipers are open ready for their action on the shoe.

Q87 Does that Copeland patent show a structure that is practical or operative? A. To me it is not a practical structure for the reasons that were explained this morning—for the reasons that were gone into extensively this morning.

Testimony of Peter C. McNulty (Rebuttal)..

Q88 Turning now to the prior art McFeely patent Number 1,129,881, please state whether you find in that patent any manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper? A. No, sir, I do not. There is no initial adjustment on the shoe whatsoever.

Q89 Please state whether you find in that prior art patent to McFeely 1,129,881 any means for effecting a preliminary adjustment of the wipers to the contour of the shoe. A. No, sir, there is none.

Q90 Please refer to this same McFeely patent, the prior art patent to McFeely, 1,129,881, as regards its bearing upon the slideable heel band adjustment claims with which we are dealing in this case, claims 23 and 91. I believe the Professor has already said that the heel band, if used in that machine, will simply come out and fall loose when the shoe is removed; is that correct? A. That is my understanding of the way it acts, and I think that is what he intended by what he said. There are not any grooves in the heel band. The parts I think the professor referred to in Figure 8 as being able to see the grooves are merely cords 50 looked at from a side view.

Q91 Is there then in that patent any such element as this element of claim 23 which I read, "means to support the lower edges of said clamping member at opposite sides"—that is the heel band—and "manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members"? A. No, sir, there is not. There is no sliding movement there. Your Honor has seen the actual-sliding movement of the bands of the plaintiff and the defendant, where there is an actual sliding movement between the support at the front end of the band. There is no such action as that in the early McFeely patent.

Q92 So it is obvious, Your Honor, that there isn't the action called for by claim 91 either. I think it is hardly necessary to ask the witness—perhaps I had better, for the record. In the language of claim 91 do you find in this early McFeely patent 1,129,881 "supporting means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe?" A. No, sir. I do not.

Q93 Turn, please, to those patents which show heel band supports—show heel bands supported by chains, those Brock patents and the Cavanagh patent, the Brock

Testimony of Peter C. McNulty (Rebuttal).

patents being 601,935, 1,002,818, and 1,188,616, and the Cavanagh 1,130,142. In that kind of a construction do you find the subject-matter of claims 23 or 91, or either of them? A. - No, sir. There is no sliding movement between the presser members at the outer end of the band and the band, or between any supporting members at the outer end of the band and the band. Your Honor will notice in all of these patents that the parts at the chain end are attached to a pivoted lever, and on the outer ends of the pivoted member there is a spring member. If movement occurs of the chain ends which would advance it forwardly, the spring under tension would cause the pivoting of the member to which the chain end is attached and there would be simply a swinging motion of the chain end, and the band with it. There is no such sliding motion between the presser members and the supports as the plaintiff and the defendant have here in the exhibits in this lawsuit. The parts may have, as I think the Doctor said, some mathematical adjustment due to radii of different circles, but it is a minute thing and not a practical sliding motion like the freeing of the heel band of the plaintiff and defendant in this lawsuit.

Of course, you called my attention to Cavanagh and I did not say anything about the fact that I agree with the Doctor that the Cavanagh Figure 4 and Figure 3—that is patent 1,130,142—shows that the band is actually riveted to the depending part from the presser member marked 52. There is no number of the part that extends down from it and contacts the band, but it is riveted. I have actually riveted a part together and watched it act, and I could see no difference whether it was riveted or unriveted.

MR. TOULMIN. I object to an ex parte test which gives us no opportunity to—

THE COURT: —The motion will be granted.

Q94 Look at 601,935 and see whether that describes the chain as fastened or not, please. That is the Brock patent 601,935. A. The chain is shown fastened to the front end of a pivot member D.

Q95 Described as such, too, isn't it, on page 2, line 82? A. Yes, sir.

Q96 In the prior art McFeely patent 1,129,881, will you describe what the motion of the hold-down is from the beginning, just the motion of the hold-down? A. The patent in its operation describes, after having gone through the operations shown by the drawings on Sheet 3, which is no part of this controversy, relating to the

Testimony of Peter C. McNulty (Rebuttal).

bringing of the upper into position and tacking it, that the shoe is then swung into position, after which the heel band is closed, the first wiping operation takes place, then the hold-down raises to position for the second wiping operation.

Q97 And stays up there until the cycle of operation is completed? A. Until the cycle of operation is completed.

Q98 Contrast that with the motion of the hold-down in the McFeely patent in suit. A. In the McFeely patent in suit the hold-down is first pushed down from an elevated position to a position below the wiper and then after wiping, after the first wiping operation takes place, the hold-down is raised between the two wiping operations and then the second wiping operation takes place, and the half-wiping operation takes place with the hold-down in that position.

Q99 In the defendant's machine does the hold-down start in the upper position and then descend and then rise again, as in the McFeely patent in suit? A. Yes, sir, it does.

MR. LYMAN: Coming now to the matter of the Hoyt patent and the prior art set up against it we, being true to colors, Your Honor, have got another colored drawing. This which I offer to present to Your Honor is the same drawing which was identified by Dr. Greene this morning and which is in evidence as Plaintiff's Exhibit 36, as representing the defendant's heel band mechanism, colored by Mr. McNulty. I would like to offer it in evidence.

The drawing so offered in evidence is made part of this record as **Plaintiff's Exhibit No. 37.**

By Mr. Lyman:

Q100 I would like to have Mr. McNulty compare the two things, the drawing of Hoyt and this drawing showing the defendant's mechanism (placing drawings before the court and witness). A. In Plaintiff's Exhibit 37 I have applied a brown color. As Plaintiff's Exhibit 37 is an enlargement of another exhibit which I don't know the number of, and the enlargement was given a number, 36, and taking that drawing I have applied to what the Doctor described as the rack portion a brown color, which receives its power from the cam and transmits the power through the spring, which I also colored brown; to the bolt having a headed member on it and nuts at the rear.

Testimony of Peter C. McNulty (Rebuttal).

end I applied a light red color and marked the head end of it "Operating Member" and from that member on each side are forwardly extending spaced rack bars, each rack bar being connected through arms to a presser member at the forward end of the heel band. I have applied to the spaced rack bar and to the arms up to the presser member a yellow color, and on the presser member itself I have applied an orange color and have put the legend "Connection between operating member and presser members to the arms," and put the lead-line to the two presser members and put the word "Heel Band" on, and you will see in the center a member which has been colored dark red, which has a yoke at its forward ends and a back stop at the center that I am pointing to. This member is adjustable with the sepia colored portions which go out to the right-hand side, and I put a lead-line and "Manual Adjustment for the Heel Band". Then I applied a pink color to the part of the arms mounted upon this adjustable supporting back stop member and also applied a pink color to the set screws that are in the arms, about which there has been so much testimony. And pivoted at the forward end of the arms are a pair of plates, to which I put the legend "Spring Pressed Plates on Loosely Mounted Arms". Behind these arms and a dark red yoke are cylinders, to which I have applied a gold color to the end, at the back end, and the member extending out to the front end that contacts the arms. This mechanism is the mechanism that was verbally described on my direct-examination and represents what we have found in defendant's machine in court, except in my application of colors in Plaintiff's Exhibit 20 I broke one of the red arms back and showed the spring inside and, as I understand the testimony here, the machine in the hall has no spring in it; it has a plug instead of springs.

Q101 But it did have the springs originally. A. That has been the testimony.

Q102 You have indicated your colors in the same way as the colors are indicated for similar parts in Exhibit 20, have you? A. I have; and I put the same legend to the same parts that appeared on Exhibit 20.

MR. LYMAN: I don't think anything more, Your Honor, than a comparison of these two drawings is necessary to show that one is a Chinese copy of the other, even down to the detail of those little set screws, which Hoyt did not show but which the plaintiff has been using for years in its commercial machine.

Testimony of Peter C. McNulty (Rebuttal).

By Mr. Lyman:

Q103 Compare now, please, the construction which is common to the Hoyt patent and to the defendant's machine, as shown on these exhibits, Plaintiff's Exhibit 36 and 37, with the two prior art patents that are cited by the defendant as the principal references against those claims, first, the Snow patent 946,708. I think that was the one that the Professor said embodied the subject-matter of claim 19, although it was not pleaded by defendant against claim 19 of Hoyt. A. In claim 19 of Hoyt the last element calls for "separate yielding means operating on each side of the band adjacent to the bight of the band to press such portions of the band against the shoe". The Doctor referred to the pair of arms 3 in Figure 3 of the Snow patent as the yieldable members. To me these are not yieldable members; they are rigid members.

Q104 Is there any description in the patent indicating that they are yieldable connections, yieldable members? A. No, sir.

MR. LYMAN: I don't think that that was cited against claim 21, Your Honor. I don't think that is relied upon in claim 21 by the Doctor. It hasn't the loosely mounted arms and means normally operative to depress them,—that combination of 21. It is not alleged to have by the Professor.

By Mr. Lyman:

Q105 Will you turn then to the Pym patent 1,368,968, which was cited by the defendant's expert witness, Professor Greene, as showing the subject-matter of the claim 21 of Hoyt. Will you compare that Pym structure that is shown in Figures 9, 10 and 11 with the Hoyt structure as shown in the Hoyt patent and as embodied in the defendant's machine, with reference to the terms of the elements called for by claim 21? A. If Your Honor will look at Figure 9 first, you will see a pair of arms 79 which are pivoted and which are secured to the forward ends of the heel band as shown in Figure 10, where the little screw 96 is shown connecting them to the heel band. Those arms are actuated to close the heel band when the bars 101 push forwardly, and as the bars are retracted the springs 100 will open the arms. Then in Figure 11 is shown a screw similar to 96, and it is marked 97, except that there is a resilient connection there instead of a rigid connection, so that the band would be pulled backward against the mem-

Testimony of Peter C. McNulty (Rebuttal).

bers 82. To me that is an entirely different organization than the pink arms of the two exhibits on the easels, one being Exhibit 20 and the other one Exhibit 37, for in the Hoyt patent in suit and in the defendant's structure, when pressure is brought rearwardly into the heel band the arms are permitted to press yieldingly against the band; and here we have a structure in which the member 82 is a rigid member behind the band; and if you look at the plan view, Figure 9, you will see how 82 is sort of a semi-circular figure extending around the hand and body. The two structures will not operate the same way, and you will not get the same result.

Q106 I think I will ask you also to compare the form of heel band mechanism shown in the McFeely patent in suit with that shown in the Hoyt patent, because I think there has been an argument made or a position stated to the effect that the claims in suit of Hoyt, numbers 19 and 21, do not differentiate from the McFeely patent. I shall point out, Your Honor, that the Hoyt patent purports to be an improvement on the McFeely patent; in this respect it refers to the McFeely patent. Will you need another drawing to illustrate that? A. No, sir, I don't think so. His Honor has a copy of the patent.

THE COURT: Does Sheet 4 give you a correct— A. —That is right; Sheet 4 is the one you would look at. Your Honor, in Sheet 4 of this patent you will find that the spring member 100 is interposed between the bell crank arms 138 and the orange presser member in Exhibit 17, which is now on the easel, so that you have a yielding connection at the forward end of the heel band, whereas in the Exhibit 20 of the Hoyt patent you have no such spring connection at the part where you see the big 208 character. That is a rigid connection at that point. So that this McFeely patent in suit does not have the unyielding connection at the forward end of the heel band.

In connection with the claim 21, in which the elements call for devices comprising arms loosely mounted on the supporting means, if you look in another figure of the patent—I think it is on Sheet 5—you will see in Figure 6 a number 68.

THE COURT: Yes.

A. That is a spring member, that is rigidly attached to the member 64, and has arms extending outwardly in each direction. So that there are no loosely mounted arms mounted on the support as called for by that claim.

Testimony of Peter C. McNulty (Rebuttal).

Q107. You have finished with that explanation?
A. Yes.

MR. LYMAN: Your Honor asked this morning if we were going to cross-examine the Professor with regard to the relationship between these Hoyt claims and the earlier prior art McFeely patent, and I understood the Professor to say he would reply upon that, so we did not go through that and I won't with this witness. I think that is all we have to ask of this witness.

Thereupon Mr. McNulty retired from the witness stand.

"This was all the evidence offered at the trial of the within cause by both parties."

MOTION

(Filed May 19, 1939.)

Now comes the defendant and moves this Court for leave to introduce in evidence a certified copy of the file wrapper of the first McFeely Patent No. 1,129,881.

This motion is made pursuant to Equity Rules Nos. 43(a), 44(a) and 52(b).

MEMORANDUM

The plaintiff at the trial took the surprising position that the first McFeely patent did not represent a successful and commercially operable structure and that the second McFeely patent was the first successful and commercially operable heel seat lasting machine.

The whole case of the plaintiff is founded upon the fact that the differences between the two patents which it claims exist in "details" (Plaintiff's brief, p. 49.), are the vital differences, it says, between success and failure; and that the first McFeely patent was never used to make shoes and was not a commercially operable machine, while the second McFeely patent in suit

Motion.

was the first successful, commercially operable heel seat lasting machine.

The defendant has now secured a certified copy of the first McFeely patent and deposited it in this Court as a part of its brief in this case. This file wrapper of the first McFeely patent shows that the statements and testimony at the trial and the statements in the brief of plaintiff were untrue because the first McFeely patent was a commercially operable, successful heel seat lasting machine that was put into commercial production and was claimed to be by this plaintiff, its counsel, McFeely and his corroborating witness Russell, such a machine.

For instance, this file wrapper of the first McFeely patent shows the following:

**** that from the said layout drawing detail drawings were made and a full-sized operative machine was constructed which has been employed for lasting heel seats in the ordinary course of manufacture of many pairs of shoes"; (Oath of McFeely executed Nov. 24, 1914, first McFeely file wrapper, p. 183.)

That he has read the accompanying affidavit of said McFeely and believes the same to be true." (Affidavit of Arthur L. Russell corroborating the McFeely affidavit of November 24, 1914 as to successful commercial use; page 184, first McFeely file wrapper.)

"It should be recognized at the beginning of this case that applicant is the first inventor ever to have produced a successful heel seat lasting machine and," etc. United Shoe attorney in file wrapper of first McFeely, p. 14, in 1913.)

"This application is therefore entitled to such liberal treatment from the Patent Office Examiner as it may be expected that the patent will receive, under these circumstances, from the courts because of its fundamental position in the heel seat lasting art. An absolutely pioneer invention is defined by those claims which recite an assembling and heel seat lasting machine because no one in the art has ever disclosed an organized machine for this work." (P. 141, first McFeely file wrapper.)

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"There appears to be no dispute about the novelty of the combinations recited in these claims and if the utility of the combination were challenged, applicant would bring forward conclusive evidence of the greatly improved results obtained by tensioning the upper forwardly and lasting the heel seat while the tension is maintained as herein described." (P. 143, first McFeely file wrapper.)

"Neither that inventor nor any one else during more than a quarter of a century had the constructive genius to see that such forward pulling and holding mechanism and heel seat lasting mechanism as applicant has combined could be correlated in an organized machine and made to produce important results in shoemaking." (P. 144, first McFeely file wrapper.)

"As applicant is advised, the combination of lasting means and a back stop with adjusting and indicating means as required has not before been shown in the lasting machine art." (United Shoe attorney in file wrapper of first McFeely, p. 124.)

"In Fig. 18 the back stop shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 having marked on it graduations indicating the proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes." (Lines 79-88, p. 4 of first McFeely patent.)

"Applicant takes the position that this combination is a new and patentable invention involving a material advance in the shoe making art and affording practical results of very substantial value and therefore, in the absence of other references, he must request the allowance of the claims above mentioned." (United Shoe attorney in file wrapper of first McFeely, p. 114.)

This Court can take judicial notice of this file wrapper and its contents and the estoppel contained therein against this plaintiff taking the position is has taken relative to the first McFeely patent and the second Mc-

Motion.

Feely patent in this litigation on the subject of commercial success. But it is deemed desirable that this file wrapper be made an exhibit in this cause. This motion is for this purpose.

It should be admitted under the following statutes and authorities:

Rule 44 (a) of the Rules of Civil Procedure reads in part:

"An official record or an entry therein, when admissible for any purpose, may be evidenced by an official publication thereof or by a copy attested by the officer having the legal custody of the record, or by his deputy, and accompanied with a certificate that such officer has the custody."

The Act of June 19, 1934, 28 U. S. C. A. 661, reads in part:

"(a) Copies of any books, records, papers, or other documents in any of the executive departments, or of any corporation all of the stock of which is beneficially owned by the United States, either directly or indirectly, shall be admitted in evidence equally with the originals thereof, when duly authenticated under the seal of such department or corporation, respectively.

"(c) The seal of any such executive department or corporation shall be judicially noticed."

The Act of June 20, 1936, 28 U. S. C. A., 695, reads as follows, in part:

"In any court of the United States and in any court established by Act of Congress, any writing or record, whether in the form of an entry in a book or otherwise, made as a memorandum or record of any act, transaction, occurrence, or event, shall be admissible as evidence of said act, transaction, occurrence, or event, if it shall appear that it was made in the regular course of any business, and that it was the regular course of such business to make such memorandum or record at the time of such act, transaction, occurrence, or event or within a reasonable time thereafter."

We therefore request the Court to reopen the case for the sole purpose of introducing this file wrapper of the first McFeely patent as Defendant's Exhibit No. H-2.

Motion.

This Court has power to reopen this case pursuant to Equity Rules Nos. 43 (a), 44 (a), and 52 (b).

Dolle, O'Donnell & Cash,
Toulmin & Toulmin,
Solicitors for Defendant.

Copy of within motion left at office of Bennet R. Knight
this 19th day of May, 1939.

James B. O'Donnell,
Attorney for Defendant.

AFFIDAVIT OF ARTHUR L. RUSSELL.
(Filed June 22, 1939.)

Arthur L. Russell, having been duly sworn, deposes and says as follows:

My name is Arthur L. Russell; I am 68 years of age and reside at Boston, Massachusetts. I was formerly an attorney in the Patent Department of the United Shoe Machinery Corporation and am now employed in the Research Department of that corporation.

I am the attorney who prosecuted the application for McFeely patent No. 1,129,881 and who made an affidavit under date of November 24, 1914 which was filed in connection with said application.

In the affidavit of the inventor, McFeely, also dated November 24, 1914 and filed in connection with said application, to which reference is made in my said affidavit, McFeely said, among other things:

"that from the said layout drawing detail drawings were made and a full-sized operative machine was constructed which has been employed for lasting heel seats in the ordinary course of manufacture of many pairs of shoes."

Affidavit of Arthur L. Russell.

Such a machine was constructed and I saw it in operation at the factory of the Victor Shoe Company at Salem, Massachusetts.

This machine was sent by the United Shoe Machinery Corporation to the Victor Shoe Company for test in the actual lasting of heel seats under commercial conditions. While there it was operated by employees of the United Shoe Machinery Corporation on work belonging to the Victor Company and shoes lasted on it were sold by the Victor Company as part of their commercial product, the arrangement between the Victor Company and the United Shoe Machinery Corporation being that no charge should be made to the Victor Company for the work done on this machine and that any shoes spoiled in the operation of the machine should be paid for by the United Shoe Machinery Corporation.

The machine was, as stated in the arguments made in the filewrapper, "a pioneer invention", in that it was the first machine for automatic heel seat lasting, and many shoes were successfully lasted upon it, of certain particular sizes. But the machine proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory; and after it had been tested for a period it was returned to the United Shoe Machinery Corporation and dismantled and no other similar machine was ever built. The first automatic heel seat lasters manufactured commercially by the United Shoe Machinery Corporation were machines of the construction shown in the McFeely patent No. 1,558,737, in suit in this case.

Arthur L. Russell.

(Duly verified)

ORDER ON DEFENDANT'S MOTION TO REOPEN
(Filed July 21, 1939).

This cause having come on to be heard on June 26, 1939 on defendant's motion to reopen the case for the purpose of introducing in evidence a certified copy of the file wrapper of the McFeely patent No. 1,429,881 and also an affidavit of Arthur L. Russell, dated June 19, 1939, filed by plaintiff herein, the parties having submitted briefs on this motion and the matter having been considered by the Court, defendant's motion is hereby denied, to all of which defendant excepts.

John H. Druffel
United States District Judge

July, 1939.

Approved as to form:

Fish, Richardson & Neave,
Of Counsel for Plaintiff.

Toulmin & Toulmin,
Of Counsel for Defendant.

**FINDINGS OF FACT, CONCLUSIONS OF LAW
AND OPINION**

(Filed July 21, 1939).

The Court makes the following findings of fact and conclusions of law.

FINDINGS OF FACT

1. This is a patent infringement suit brought by United Shoe Machinery Corporation, a New Jersey corporation, against The Williams Manufacturing Company, an Ohio corporation, on McFeely patent No. 1,558,737 and on Hoyt patent No. 1,508,394. The claims in suit are claims 6 and 85, 23 and 91, and 42 of the

Findings of Fact, Conclusions of Law and Opinion.

McFeely patent and claims 19 and 21 of the Hoyt patent. Plaintiff is the owner of the patents in suit and has been the owner thereof at all times since said patents respectively were issued.

2. The charge of infringement is based on defendant's use of four "Calzera" automatic heel seat lasting machines purchased by defendant from Moenus Maschinenfabrik A/G, Frankfurt A/M, Germany, three in 1933 and one in 1934, which machines have been used continuously by defendant since said dates.

3. The McFeely patent in suit discloses a power-operated heel seat laster which automatically performs, in a fraction of a second, the operation of heel seat lasting. Heel seat lasting involves conforming the upper materials to the contour of the heel end of the last, wiping the marginal portions or "lasting allowance" of the upper materials, around the heel end of the last, inwardly over an insole on the last, and fastening it to the insole in lasted position.

4. The McFeely patent in suit discloses, and the claims in suit are directed specifically to, certain features of construction which render the machine capable of operation on a wide range of sizes and shapes of shoes.

5. The tacker-wiper claims, Nos. 6 and 85, are specifically directed to tacking units which cooperate with the wiper plates in the performance of the heel seat lasting operation, the tackers moving with the wiper plates, both in preliminary manual adjustment of these parts to accommodate shoes of different sizes and in the subsequent power operation of the machine.

6. The sliding heel band adjustment claims, Nos. 23 and 91, are specifically directed to mechanism in which the heel band is adjustable lengthwise of the last, to accommodate shoes of different sizes, and in such adjustment the heel band slides relative to its side supporting members and to its pressure members.

7. Claim 42 is directed to a machine having the general characteristics and sequence of hold-down movements of that shown and described in the patent, one element of which machine is manually adjustable means for determinately varying the amount of vertical movement of the hold-down.

8. The machine shown in the McFeely patent in suit is the first automatic heel seat laster which ever went into commercial use. Prior to the advent of this machine, heel seat lasting had been done principally on so-called "hand method" or "bed" machines which involved re-

Findings of Fact, Conclusions of Law and Opinion.

peated manipulations of levers, foot treadles and various other appliances by the operator, and was a time-consuming and laborious operation, with non-uniform results.

9. Machines of precisely the form shown in the McFeely patent in suit were manufactured by the plaintiff, under the designation "Model A", for a period of years. Subsequently, similar machines, differing from that shown in the McFeely patent in that the heel band pressure mechanism was made in accordance with the Hoyt patent in suit, were manufactured by the plaintiff under the designation "Model B". These models were superseded by the plaintiff's "Model D" and "Model E" automatic heel seat lasters, which models, like the "Model B" machine, employed the Hoyt improvement in heel band pressure mechanism, and which differ otherwise from the precise showing of the McFeely patent in that in these models the tacks are driven through holes in the wipers instead of at a predetermined distance beyond the edge of the wipers. These differences do not affect the principle or mode of operation of the machine as regards the subject matter of the McFeely claims in suit and all of said models have embodied the features of construction to which said claims are directed.

10. The features of construction covered by the McFeely claims in suit are of large practical importance.

11. Defendant's machines are substantially similar to the machines shown in the McFeely patent in suit, modified by the use of the heel band pressure mechanism of the Hoyt patent in suit, and similar to the plaintiff's "Model D" and "Model E" in that in them the tacks are driven through holes in the wipers instead of at a predetermined distance beyond the edge of the wipers.

12. In defendant's machines the tacker-wiper combination is differently mounted and operates in a slightly different manner than that taught by the McFeely patent, but said machines employ substantially the same means shown in the McFeely patent and covered by McFeely claims 6 and 85.

13. The heel band adjustment in defendant's machines is substantially identical with that shown in the McFeely patent in suit and embodies the subject matter described in the sliding heel band adjustment claims of the McFeely patent, claims 23 and 91.

14. Modifications said to have been made in these machines in 1936 by the removal of certain wing screws

Findings of Fact, Conclusions of Law and Opinion.

and clips do not affect the operation of the machine nor avoid infringement of said claims 23 and 91.

15. Defendant asserts that the use of said wing screws and clips in its operations is unnecessary and that it does not intend to restore the same; and the Court so finds.

16. Defendant's machine produced in court had a stop for determining the amount of vertical movement of the hold-down. This stop can be adjusted by loosening a screw which attaches the stop to the frame and putting in or removing a shim; and by this manipulation the vertical movement of the hold-down may be determinately varied. Originally, defendant's machine had a form of adjustable stop similar to that shown at "X" on the photograph of the Moenus automatic heel seat laster, Plaintiff's Exhibit 10. Whichever of these forms is used, the machine has manually adjustable means for determinately varying the amount of vertical movement of the hold-down.

17. Defendant was notified by plaintiff on or about January 28, 1936, of its alleged infringement of the patents in suit by its use of said machines, and continued thereafter to use said machines.

18. Defendant's machines infringe all of the claims in suit of the McFeely patent in suit, Nos. 6 and 85, 23 and 91 and 42.

19. The Hoyt patent in suit No. 1,508,394 describes a form of "fastening inserting machine" embodying certain features which the patent says may be usefully employed in other types of machines.

20. One of the features of construction disclosed in said Hoyt patent relates to heel band pressure mechanism in which there are unyielding connections to the pressure members which force the open ends of the band against the shoe and separate yielding means operating on each side of the band adjacent to the bight of the band to press such portions of the band against the shoe, said latter means comprising arms loosely mounted on the supporting means for the band and means normally operative to press said arms against the band. Claims 19 and 21 of the Hoyt patent are directed to this arrangement.

21. The arrangement of heel band pressure mechanism disclosed in said Hoyt patent and covered by said claims is of practical importance and has been used in all of plaintiff's commercial automatic heel seat lasters since the "Model A".

Findings of Fact, Conclusions of Law and Opinion.

22. The heel band pressure mechanism of defendant's machine, as it existed up to and at the time this suit was brought, was identical with that shown in the Hoyt patent and described by said claims 19 and 21.

23. The so-called "set screws" or adjusting screws which are present in the arms mounted adjacent the bight of the heel band, both in the defendant's machines and in the plaintiff's "Model D" and "Model E" machines, do not interfere with the function of these arms in swinging about their pivot or in applying pressure to the corners of the band during the operation of the machine, but only regulate the extent of this swinging movement.

24. Defendant's machines infringe said claims 19 and 21 of said Hoyt patent.

25. The features of construction defined in the tack-er-wiper claims of the McFeely patent in suit, Nos. 6 and 85, were new and useful.

26. The features of construction defined in the sliding heel band adjustment claims of the McFeely patent in suit, Nos. 23 and 91, were new and useful.

27. The features of construction defined in claim 42 of the McFeely patent in suit were new and useful.

28. The features of construction of the heel band pressure mechanism defined in claims 19 and 21 of the Hoyt patent in suit were new and useful.

29. The earlier McFeely patent No. 1,129,881 discloses a machine in which, during the power stroke, after certain "feelers" or stops on the tackers contact the shoe or the heel band, the wiper plates are withdrawn during the rest of the power stroke of the machine. This patent discloses no means for adjusting the position of the wipers or tackers preliminary to the power stroke, nor any lengthwise adjustment of the heel band in which the band slides relative to its supports and pressure members, nor any adjustment for varying the amount of vertical movement of the hold-down. This patent does not disclose the sequence of operations of the McFeely patent in suit, as defined in claim 42 in suit, nor does it disclose the inventions covered by any of the McFeely claims in suit or the inventions covered by the Hoyt claims in suit.

30. The Pym patent No. 1,368,968 discloses no tack-ers. The machine of this patent was neither designed nor intended to perform a complete heel seat lasting operation. Pym provided no lengthwise adjustment for his heel band, and no such sliding adjustment as is called for by claims 23 and 91 of the McFeely patent in

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suit. The Pym patent does not disclose the sequence of operations called for by claim 42 of the McFeely patent in suit, nor any means for adjusting the amount of vertical movement of the hold-down. Pym does not disclose the heel band pressure mechanism described in the Hoyt patent in suit and called for by claims 19 and 21 thereof in suit.

31. The McFeely patent in suit, No. 1,558,737, does not disclose the heel band pressure mechanism described in the Hoyt patent in suit and called for by claims 19 and 21 thereof in suit.

32. The earlier McFeely patent No. 1,129,881 and the Pym patent No. 1,368,968 do not disclose, either separately or in combination, the subject matter of the claims in suit of the McFeely patent No. 1,558,737 in suit or of the Hoyt patent in suit No. 1,508,394.

33. The prior patents cited by defendant against claims 23 and 91 of the McFeely patent in suit, such as the Brock patents Nos. 601,935, 1,002,818, and 1,188,616; Cavanagh No. 1,130,142, and others, taken singly or in combination, fail to disclose the sliding adjustment of the heel band disclosed in the McFeely patent in suit and claimed in claims 23 and 91 thereof.

34. Defendant offered in evidence many other prior art patents in addition to those specifically mentioned above. These patents, either alone or in combination, fail to disclose the inventions described in the McFeely and Hoyt patents in suit and called for by the claims in suit.

35. The inventions shown in the McFeely and Hoyt patents in suit and described in the claims in suit were new and useful and involved invention over the prior art.

CONCLUSIONS OF LAW

1. The McFeely patent in suit, No. 1,558,737, is valid as to the claims in suit, Nos. 6 and 85, 23 and 91, and 42.

2. The Hoyt patent in suit, No. 1,508,394, is valid as to claims 19 and 21 in suit.

3. Defendant has infringed said claims 6, 85, 23, 91 and 42 of the McFeely patent in suit by the use of its Moenus automatic heel seat lasting machines.

4. Defendant has infringed said claims 19 and 21 of the Hoyt patent in suit by the use of its Moenus automatic heel seat lasting machines.

5. Plaintiff is entitled to an injunction against further infringement of said claims, to an accounting for past infringement thereof, and to its costs.

Findings of Fact, Conclusions of Law and Opinion.

OPINION

After careful consideration of the evidence including the prior art, and an examination of the authorities cited in behalf of plaintiff and defendant, this Court finds as a matter of fact that the heel seat laster covered by the McFeely patent in suit is the first automatic heel seat laster commercially practicable; that by reason thereof the heel seat lasting of shoes is accomplished four times as fast as by the prior hand method with a consequent reduction in cost; that the workmanship of the heel seat of a shoe lasted by the McFeely machine is far superior in that all are uniform, whereas when done by hand the workmanship varies according to the skill of the operator, which also resulted in a much larger percentage of damaged shoes than is now the case when the heel seat is lasted by the machine.

The Court also finds as a matter of fact that this machine is a commercial success as evidenced by the fact that more than twelve hundred are in use throughout the world.

The Court also finds as a matter of fact that Claims 6 and 8 of the patent in suit (tacker-wiper combination) are valid and have been infringed by defendant; that the defense of anticipation has not been sustained by defendant; that while the McFeely patent in suit No. 1,558,737, embraces many elements of the McFeely patent No. 1,129,881, the earlier McFeely patent lacked, so far as it relates to Claims 6 and 85, certain elements which prevented it from being commercially successful; that is to say, among others, it would not permit of a successful operation upon a range of shoe sizes; the operation of the tackers and wipers could not be controlled with accuracy, or in other words, adjusted as are the tackers and wipers in the machine covered by the patent in suit; and also, immediately before the tacking movement the wipers would be retracted partly to permit of the tacking and in so doing have a tendency to pull the upper from the insole, which would tend in some instances to and in many operations did make an imperfect job, if not damage the shoe. This was overcome in the machine covered by the patent in suit by the wipers moving in toward the shoe, holding the upper in place rather than pulling the upper away from the last, prior to the tacking as in the earlier McFeely patent.

The Court also finds as a matter of fact that while the tacker and wiper combination in defendant's machine is differently mounted and operates in a slightly different

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manner than that taught by the McFeely patent in suit, this Court is obliged to hold that it infringes plaintiff's patent in suit because it employs substantially the same means. *Gordon Form Lath Co. v. Walcott Machine Co.*, 32 F. (2d) 55, 61; *Reynolds Spring Co. v. L. A. Young Industries* 36 F. (2d) 150, 152.

The Court also finds as a matter of fact that Claim 42, (a general claim covering the machine based on the McFeely patent in suit) is valid and infringed by the defendant. On the issue of fact as to infringement the Court holds with the plaintiff, based on the testimony of witness Ryan, who testified that the hold-down adjustment mechanism was in place on the machine when he saw it at defendant's plant. This testimony is supported by the "Moenus" catalogue, plaintiff's Exhibit No. 10, showing the member marked "X" in place. Also by the fact that although defendant's machine exhibited in court did not have the member "X" affixed to the machine, nevertheless there were threaded openings to which it had been attached. This fact together with the testimony that the clips connecting the heel band mechanism were sawed off, and the bight springs removed in an attempt to avoid infringement, tends to discredit defendant's witnesses' testimony that their machines were being operated without the hold-down adjustment.

As to Claims 23 and 91 of McFeely and Claims 19 and 21 of Hoyt, the Court finds as a matter of fact that they are valid and infringed by defendant, notwithstanding the sawing off of the clips to which the wing nuts were fastened.

On the issue of fact of the sawing of the heel band clip the Court is of the opinion and so finds that because of the standard of shoe manufactured by defendant, said heel seat lasting machine may be used without the use of said clip and that the defendant has sustained the burden of proof that they do not intend to continue using the lasting machine with the attached clips.

Specifically, as to the heel band adjustments covered by the McFeely and Hoyt patents, defendant offered evidence as to the state of the prior art, and strongly contends the McFeely patent in suit is anticipated by the earlier McFeely patented heel band mechanism. On this subject the Court finds as a matter of fact that Hoyt made a valid and new contribution to permit of the centering of the shoe in the machine, and to assure equal pressure at both sides and at the end of the heel; that as to the McFeely patent, although the McFeely patent

Findings of Fact, Conclusions of Law and Opinion.

in suit does contain some of the elements of the earlier McFeely patent, new elements were introduced that were novel and helped make the McFeely heel seat laster in suit the commercial success that it is.

Specifically, on the question of anticipation by the earlier McFeely patent of the patent in suit, the Court in holding the same valid and infringed is obliged to follow the principle enunciated in Consolidated Window Glass Co. v. Window Glass Machine Co. et al., 261 Fed. 362, Barber v. Otis Motor Sales Co., 240 Fed. 723.

John H. Druffel
United States District Judge

July 21, 1939.

INTERLOCUTORY DECREE

(Filed July 21, 1939).

This cause having come on to be heard on the pleadings and proofs and having been argued by counsel and considered by the Court, it is hereby

ORDERED, ADJUDGED and DECREED:

1. That United States Letters Patent to McFeely No. 1,558,737 is good and valid in law as to claims 6, 23, 42, 85 and 91 thereof and that said McFeely was the original and first inventor of the improvements patented therein.

2. That United States Letters Patent No. 1,508,394 to Hoyt is good and valid in law as to claims 19 and 21 thereof and that said Hoyt was the original and first inventor of the improvements patented therein.

3. That the plaintiff, United Shoe Machinery Corporation, is the owner of the entire right, title and interest in and to said Letters Patent and each of them.

4. That the defendant, The Williams Manufacturing Company, has infringed said Letters Patent and each of them by using heel seat lasting machines embodying

Interlocutory Decree.

the inventions described and patented by said Letters Patent and each of them and in particular by claims 6, 23, 42, 85 and 91 of said McFeely patent and by claims 19 and 21 of said Hoyt Patent.

5. That a perpetual injunction issue out of and under the seal of this Court directed to the said defendant, The Williams Manufacturing Company, its officers, agents, clerks, servants and workmen enjoining and restraining them, and each of them, from directly or indirectly infringing said Letters Patent No. 1,558,737 and 1,508,394, or either of them, as to said claims and from contributing to or aiding and abetting the infringement thereof by others.

6. That the plaintiff recover the profits, savings and advantages which defendant has derived, received or made by reason of its said infringement of said Letters Patent and each of them, and also all damages which the plaintiff has sustained from said infringement, and that this cause be referred to a Master of this court to be appointed to take and state an account of such profits, savings and advantages and to assess such damages and to report thereon with all convenient speed; and the officers, employees and agents of said defendant are hereby directed and required to attend the aforesaid Master from time to time, as required, and to produce before him such books, papers and documents as relate to the matters at issue, and to submit to such oral examination as said Master may require.

7. That as to United States Letters Patent to Pym No. 1,368,968, which was withdrawn from suit prior to the trial, the bill of complaint be dismissed.

8. That plaintiff recover its costs.

This decree shall be suspended for a period of ten days from date and may be superseded pending an appeal to the United States Circuit Court of Appeals on the giving by defendant of a supersedeas bond in the sum of \$10,000.00 with surety to be approved by this Court.

John H. Druffel

United States District Judge

Approved as to form:

Fish, Richardson & Neave,
Of Counsel for Plaintiff.

Toulmin & Toulmin,
Of Counsel for Defendant.

NOTICE OF APPEAL.

(Filed July 29, 1939).

To The Honorable District Judges of the District Court of the United States for the Southern District of Ohio, Western Division:

Notice is hereby given that the Williams Manufacturing Company, the above named defendant, hereby appeals to the United States Circuit Court of Appeals for the Sixth Circuit from the interlocutory order and decree entered herein on July 21, 1939, sustaining the bill of complaint and, among other things, awarding plaintiff an injunction and an accounting.

Bond for costs and to supersede the injunction, in the sum of Ten Thousand dollars (\$10,000.00), with the Mellbank Surety Corporation, Pittsburgh, Penna., as surety, is submitted herewith.

Dated this 29th day of July, 1939.

THE WILLIAMS MANUFACTURING COMPANY,
Defendant,

By H. A. Toulmin, Jr.
Counsel for Defendant,
Mutual Home Bldg.,
Dayton, Ohio.

Toulmin & Toulmin,
H. A. Toulmin,
H. A. Toulmin, Jr.,
James B. O'Donnell,
Solicitors and Of Counsel
for Defendant.

SUPERSEDEAS BOND

(Filed July 29, 1939).

Know all men by these presents: That we, The Williams Manufacturing Company, of Portsmouth, Ohio, as principal, and Mellbank Surety Corporation, a corpora-

Supersedeas Bond.

tion of Delaware, with its principal place of business at 525 William Penn Place, Pittsburgh, Pennsylvania, as surety, are held and firmly bound unto the above named plaintiff, United Shoe Machinery Corporation, in the full and just sum of Ten Thousand Dollars (\$10,000.00) to be paid to said plaintiff, its successors, assigns or legal representatives, to which payment well and truly to be made, we bind ourselves, our successors, assigns and legal representatives, jointly and severally by these presents.

Executed this 26th day of July, 1939.

The condition of this obligation is such that:

Whereas, on the 21st day of July, 1939, in the above entitled action between the above named plaintiff, United Shoe Machinery Corporation, and the above named defendant, The Williams Manufacturing Company, an interlocutory decree was rendered against the defendant by the United States District Court for the Southern District of Ohio, Western Division, holding the patents in suit valid and infringed and awarding an injunction to enjoin further infringement and the said defendant is appealing from said decree to the United States Circuit Court of Appeals for the Sixth Circuit to reverse the decree of said District Court in the aforesaid suit and is filing notice of said appeal with the Clerk of said District Court in accordance with the Federal Rules of Civil Procedure:

Now the condition of the above obligation is such that if said The Williams Manufacturing Company, the defendant, shall prosecute its said appeal to effect, and shall answer all charges, damages and costs that may be awarded against it, if it fails to make its said appeal good, then the above obligation to be void; otherwise to remain in full force and virtue.

THE WILLIAMS MANUFACTURING COMPANY,

Principal,

By A. G. Williams,
President.

Attest: F. L. Williams,
Secretary

(Seal)

MELLBANK SURETY CORPORATION,

Surety.

By W. M. Smiley,
Vice President.

(Seal)

Attest: E. B. Clarke, Secretary.

(Duly Authenticated)..

ORDER EXTENDING TIME FOR FILING TRANSCRIPT IN COURT OF APPEALS.

(Filed August 7, 1939.)

It appearing upon application of defendant, that the record on appeal herein is such that it is impractical to print the same within 40 days after the notice of appeal, it is hereby ordered that the record on appeal herein shall be filed with the Court of Appeals for the Sixth Circuit within 90 days from the date of the notice of appeal filed July 29, 1939, or on or before October 27, 1939.

Nevin, United States Judge.

Approved as to form:
Bennett R. Knight,
Counsel for Plaintiff.

Toulmin & Toulmin,
Counsel for Defendant.

ORDER ON WITHDRAWING EXHIBITS

(Filed October 4, 1939.)

Upon application of defendant and for good cause shown, it is ordered that the original papers herein as may be needed for printing the record for the United States Circuit Court of Appeals for the Sixth Circuit may be withdrawn and used by the printer for that purpose.

Nevin, United States Judge.

Approved as to form:
Bennett R. Knight,
Counsel for Plaintiff.

Toulmin & Toulmin,
Counsel for Defendant.

**ORDER DIRECTING FORWARDING OF PHYSICAL
EXHIBITS TO COURT OF APPEALS**

(Filed October 5, 1939).

This day came the Defendant-Appellant, The Williams Manufacturing Company, by its attorneys and prayed the Court that said original and stipulated Exhibits in the within case be sent by the Clerk of this Court to the Clerk of the United States Circuit Court of Appeals for the Sixth Circuit, as part of the Record on the Appeal in this case; and Plaintiff-Appellee consented thereto;

IT IS ORDERED, that the Clerk of this Court send to the Clerk of the United States Circuit Court of Appeals at Cincinnati, Ohio, the following Exhibits, being the originals of certain Exhibits introduced in evidence in the within cause:

Plaintiff's Exhibits Nos. 3-A to 3-I inclusive; 5-A to 5-I inclusive, 6, 8-A, 8-B, 10, 10-A, 11, 13 to 22 inclusive, 24, 26, 27, 28, 33, 34, 35, 35-A, 36 and 37.

Defendant's Exhibits Nos. B, D to Z inclusive; A-1 to X-1 inclusive; A-2 to D-2 inclusive; E-2-A to E-2-E inclusive; F-2, G-2 and H-2.

It is further ordered that Plaintiff's Exhibits Nos. 4 and 7 and No. 1224 being heavy bulky pieces of machinery, Exhibits 4 and 7 being retained in the custody of the plaintiff, and Exhibit 1224 being retained in the custody of the defendant, may be sent to the Clerk of the Court of Appeals for the inspection of said Court in connection with this appeal by either parties so desiring.

Dated this day of October, 1939.

Druffel,
United States District Judge.

Approved:

Fish, Richardson & Neave,
Attorneys for Plaintiff-Appellee.

Toulmin & Toulmin,
Attorneys for Defendant-Appellant.

**STIPULATION AND DESIGNATION AS TO CON-
TENTS OF TRANSCRIPT OF RECORD ON
APPEAL.**

(Filed October 5, 1939.)

It is stipulated by the parties hereto that the contents of the Transcript of Record on appeal in the above-entitled cause shall consist of the items specified to be printed by the defendant-appellant in the attached Designation of Contents of Transcript of Record on Appeal and, when so printed and certified to by the Clerk of the District Court as to correctness, and filed, shall be considered as the Transcript of the Record, evidence and proceedings of this cause in full compliance with Paragraphs (a), (b) and (f) of Rule 75 of the Rules of Civil Procedure. This stipulation shall constitute no waiver of the right of either party. To apply to the Court to order changes or additions to be made in the record.

All Exhibits introduced in evidence or offered in evidence at the trial of the within cause not specified to be reproduced in the printed Transcript of Record are to be treated as physical exhibits to be sent by the Clerk of the District Court to the Clerk of the Court of Appeals for the Sixth Circuit at Cincinnati, Ohio, as such physical exhibits.

Fish, Richardson & Neave,
Attorneys for Plaintiff-Appellee.

Toulmin & Toulmin,
Attorneys for Defendant-Appellant.

**DESIGNATION OF CONTENTS OF TRANSCRIPT
OF RECORD ON APPEAL TO BE PRINTED BY
THE DEFENDANT-APPELLANT.**

(Filed October 4, 1939.)

To The Clerk of the District Court of the United States
For the Southern District of Ohio, Western Division:

Pursuant to Rule 75 (a), (b) and (f) of the Federal Rules of Civil Procedure and the attached Stipulation of the parties, please prepare a Transcript of Record for the Circuit Court of Appeals for the Sixth Circuit in the above-entitled cause and include therein the entire record and all proceedings and evidence consisting of the papers, files, orders and proceedings designated herein below as follows:

Item Number Of Designation	Description of Item
1.	Bill of Complaint.
2.	Motion of Defendant to Strike Paragraph (9) of Bill of Complaint.
3.	Order Sustaining Motion to Strike Paragraph (9) of Bill of Complaint.
4.	Amended Bill of Complaint.
5.	Motion of Defendant for Further Particulars.
6.	Decision of Judge Nevin on Motion for Further Particulars.
7.	Order Entered on Defendant's Motion for Further Particulars.
8.	Plaintiff's Statement of Particulars.
9.	Plaintiff's Statement of Dates of Invention.
10.	Defendant's Statement of Dates of Prior Uses To Be Relied Upon By Defendant.
11.	Answer and Counterclaim of Defendant.
12.	Motion of Plaintiff to Dismiss Defendant's Counterclaim.
13.	Plaintiff's Motion for Further and Better Particulars.
14.	Plaintiff's Further Bill of Particulars.
15.	Statement of Prior Art Relied Upon By Defendant.

Designation of Contents of Transcript of Record on
Appeal to be Printed by the Defendant-Appellant.

Item Number
of
Designation

Description of Item

16. Order Withdrawing Plaintiff's Motion to Dismiss Counterclaim of Defendant and Granting Leave to File Answer.
17. Plaintiff's Answer to Defendant's Counterclaim.
18. The Reporter's Transcript of the Evidence and Proceedings had at the Trial and Hearing before District Judge, John H. Druffel, January 16 to 25, 1939 inclusive, in form to be subsequently agreed upon by the parties, or in the absence of such agreement, Certified by the Clerk.
19. The Following Notation shall appear at the end of The Reporter's Transcript as called for under Item 18 hereof:
"This was all the evidence offered at the trial of the within cause by both parties".
20. Motion of Defendant for Leave to Introduce in Evidence a Certified Copy of the File Wrapper of the First McFeely Patent No. 1,129,881.
21. Affidavit of Arthur L. Russell, filed by the Plaintiff, June 22, 1939, in connection with Plaintiff's Memorandum in Opposition to Defendant's Motion to Reopen.
22. Order on Defendant's Motion to Reopen.
23. Findings of Fact, Conclusions of Law and Opinion entered July 21, 1939.
24. Interlocutory Decree Entered July 21, 1939.
25. Notice of Appeal filed by Defendant.
26. Supersedeas and Appeal Bond in amount of \$10,000.00 filed by Defendant.
27. Order Extending Time For Filing Transcript of Record in Court of Appeals.

Designation of Contents of Transcript of Record on Appeal to be Printed by the Defendant-Appellant.

Item Number of Designation	Description of Item
28.	Order Permitting Withdrawal of Papers, and Exhibits to be Printed.
29.	Order re sending up Physical Exhibits.
30.	This Stipulation and Designation of Contents of Transcript of Record on Appeal.
31.	Stipulation re Certification of Record by Clerk of District Court.
32.	Certificate of Clerk of District Court.

EXHIBITS

The Transcript of Record shall include also the following Exhibits:

PLAINTIFF'S EXHIBITS

Number of Exhibit	Description of Exhibit
1.	Printed Copy of McFeely Patent No. 1,558,737, dated October 27, 1925.
2.	Printed Copy of Hoyt Patent No. 1,508,394, dated September 16, 1924.
9.	Letter dated December 17, 1935 to Albeko Shoe Machinery Corporation.
10.	(Pages marked a, b, c, d and e only) Catalogue of Moenus Maschinenfabrik A.-G., Frankfurt on Main.
12a to 12m inclusive.	Correspondence and cablegram between Moenus Maschinenfabrik A.-G., Albeko Shoe Machinery Corporation and United Shoe Machinery Corporation.
23-A	Photograph showing Plan View of Plaintiff's Exhibit 8-B.
23-B	Photograph showing Top View of Plaintiff's Exhibit 8-B with Plates Removed.
23-C	Photograph showing Bottom View of Heel Band Portion of Plaintiff's Exhibit 8-A.

Designation of Contents of Transcript of Record on
Appeal to be Printed by the Defendant-Appellant.

Number of Exhibit	Description of Exhibit
23-D	Photograph showing Plan View of Plaintiff's Exhibit 8-A.
23-E	Photograph showing Front View of Plaintiff's Exhibit 8-A.
23-F	Photograph showing Bottom Plan View of Plaintiff's Exhibit 8-B.
23-G	Photograph showing Plan View of Plaintiff's Exhibit 8-B.
25-A	Photograph showing Complete View of Left-Hand Side of Defendant's Machine.
25-B	Photograph showing Complete Front View of Defendant's Machine.
25-C	Photograph showing Complete View of Right-Hand Side of Defendant's Machine.
25-D	Photograph showing Close-Up View of Part of Right-Hand Side of Defendant's Machine.
25-E	Photograph showing Close-Up Front View of Defendant's Machine.
25-F	Photograph showing Front View Looking Into Tacker-Wiper Mechanism of Defendant's Machine.
25-G	Photograph showing Bottom View of Tacker-Wiper Unit of Defendant's Machine.
25-H	Photograph showing Bottom View of Tacker-Wiper Unit, with Right-Hand Plate Removed, of Defendant's Machine.
25-I	Photograph showing Top View of Part of Tacker-Wiper Unit of Defendant's Machine.
25-J	Photograph showing Close-Up View, Tacker-Wiper Removed, of Defendant's Machine.
25-K	Photograph showing Heel Band Mechanism of Defendant's Machine Looking Up From Bottom.
25-L	Photograph showing Heel Band Mechanism of Defendant's Machine

Designation of Contents of Transcript of Record on
Appeal to be Printed by the Defendant-Appellant.

Number of
Exhibit

Description of Exhibit

- | | |
|------|--|
| | From Bottom With Machine Actuated. |
| 25-M | Photograph showing Heel Band Mechanism of Defendant's Machine with Band in Place. |
| 25-N | Photograph showing Heel Band Mechanism of Defendant's Machine with Band Closed. |
| 25-O | Photograph showing Heel Band Mechanism of Defendant's Machine, Bottom View Band Up-Side-Down. |
| 25-P | Photograph showing Heel Band Mechanism of Defendant's Machine, from above, Parts Separated. |
| 25-Q | Photograph showing Top View of Heel Band of Defendant's Machine. |
| 25-R | Photograph showing Rear View of Heel Band of Defendant's Machine. |
| 25-S | Photograph showing Right-Hand Side of Heel Band of Defendant's Machine. |
| 25-T | Photograph showing Left-Hand Side of Heel Band of Defendant's Machine. |
| 25-U | Photograph showing View of Actuating Parts, Set Screws, Supporting Slide, Back-Stop, Pressure Plates, etc. of Defendant's Machine. |
| 25-V | Photograph showing Right-Hand Side Rack Device, Plug and Nut, etc. of Defendant's Machine. |
| 29. | Sheet of Photographs of Defendant's Machine entitled "General View of Machine". |
| 30. | Sheet of Photographs of Defendant's Machine entitled "Wiper-Tacker Mechanism". |
| 31. | Sheet of Photographs of Defendant's Machine entitled "Heel Band Adjusting Mechanism". |
| 32. | Sheet of Photographs of Defendant's Machine entitled "Heel Band Pressure Mechanism". |

**Designation of Contents of Transcript of Record on
Appeal to be Printed by the Defendant-Appellant.**

DEFENDANT'S EXHIBITS

**Number of
Exhibit**

Description of Exhibit

A.

Jorgensen Patent No. 1,852,015.

C.

Printed Copies of Prior Art Patents
as follows:

Name	Number	Date
Copeland et al	No. 244,714	July 19, 1881
Lombard	No. 524,445	August 14, 1894
Eaton	No. 596,323	December 28, 1897
Brock	No. 601,935	April 5, 1898
Snow	No. 701,412	June 3, 1902
Snow	No. 946,708	January 18, 1910
Plant	No. 958,280	May 17, 1910
Brock	No. 1,002,818	September 12, 1911
Keys	No. 1,023,854	April 23, 1912
MacLeod	No. 1,030,519	June 25, 1912
Bayard	No. 1,068,843	July 29, 1913
McFeely	No. 1,129,881	March 2, 1915
Cavanagh	No. 1,130,142	March 2, 1915
Stiggins	No. 1,132,630	March 25, 1915
Brothers	No. 1,135,945	April 13, 1915
McFeely	No. 1,135,958	April 13, 1915
Brock	No. 1,188,616	June 27, 1916
Merrick	No. 1,245,117	October 30, 1917
Pym	No. 1,368,968	February 15, 1921
McFeely	No. 1,558,737	October 27, 1935.

(NOTE:

The McFeely Patent No. 1,558,737, mentioned above as being part of Defendant's Exhibit "C", being the same as Plaintiff's Exhibit No. 1, is not to be reproduced here, the Transcript of Record to contain the name, number and date of this Patent No. 1,558,737, with the notation that it is the same as Plaintiff's Exhibit No. 1 and is, therefore, not duplicated.)

**Number of
Exhibit**

Description of Exhibit

Y-1-A

Letter dated January 18, 1937 from the Williams Manufacturing Company by F. L. Williams to Toulmin & Toulmin.

Y-1-B

Copy of letter dated January 21, 1937 from Toulmin & Toulmin to H. E. Lyman.

**Designation of Contents of Transcript of Record on
Appeal to be Printed by the Defendant-Appellant.**

Z-1

Letter dated February 9, 1938 from
The Williams Manufacturing Com-
pany by B. T. Gialdim to Toulmin &
Toulmin.

All of the above called for papers, documents and
exhibits are to be delivered to the printer for the
purpose of printing and reproducing same.

**Fish, Richardson & Neave,
Attorneys for Plaintiff-Appellee.**

**Toulmin & Toulmin,
Attorneys for Defendant-Appellant.**

**CERTIFICATE AS TO CORRECTNESS OF
PRINTED RECORD ON APPEAL**

**TO THE CLERK OF THE UNITED STATES DIS-
TRICT COURT FOR THE SOUTHERN DISTRICT
OF OHIO, WESTERN DIVISION:**

I, Rowan A. Greer, hereby stipulate and certify that
I am Associate Counsel for the firm of Toulmin and Toul-
min, attorneys of record for the defendant in the above
action, and that the printed record on appeal, compris-
ing two volumes is a full, true and correct copy of all
orders, records and proceedings in said case, as the same
appears on file in the office of the Clerk of the District
Court, and as called for in the designation as to the
contents of the Transcript of the Record on Appeal.

Rowan A. Greer.

CERTIFICATE OF CLERK

United States District Court, Southern District of Ohio,
Western Division.

United Shoe Machinery Corporation,
In Equity No. 1016 vs. Plaintiff,

The Williams Manufacturing Company,
Defendant.

I, Harry F. Rabe, Clerk of the District Court of the United States for the District and Division aforesaid, do hereby certify that the foregoing pages numbered from 1 to 498 inclusive, constituting Volume I, and pages 1 to 509 of Volume II, being the printed Exhibits, contain a true and correct copy of the record and proceedings indicated in the praecipe found on page 492 herein, as the same appear of record and on file in the office of the Clerk of said Court, in the above-entitled cause.

In witness whereof, I have hereunto subscribed my name and affixed the seal of said Court, at the City of Cincinnati, Ohio, the day of, 19.....

(Seal)

.....
Clerk.

.....
Deputy.

**PROCEEDINGS IN THE
UNITED STATES CIRCUIT COURT OF APPEALS
FOR THE SIXTH CIRCUIT**

CAUSE ARGUED AND SUBMITTED

(February 13, 1941—Before: SIMONS, HAMILTON and
MARTIN, JJ.)

This cause is argued by Harry A. Toulmin, Jr. for Appellant and by H. F. Lyman for Appellee and is submitted to the court.

DECREE

(Entered June 25, 1941)

Appeal from the District Court of the United States for the Southern District of Ohio.

This cause came on to be heard on the transcript of the record from the District Court of the United States for the Southern District of Ohio, and was argued by counsel.

ON CONSIDERATION WHEREOF, It is now here ordered, adjudged and decreed by this Court that the decree of the said District Court in this cause be and the same is hereby amended in accordance with the opinion of this court and as so amended is affirmed.

OPINION

(Filed June 27, 1941)

Before: SIMONS, HAMILTON and MARTIN, Circuit Judges.

SIMONS, Circuit Judge. Certain of the claims of two patents in the shoe-making art were held below to be valid and infringed by a number of machines purchased abroad by the appellant and used by it in the United States. The appellant assails the decree in respect both to its adjudication of validity and infringement.

The patents in suit are McFeely, No. 1,558,737, for a lasting machine, granted October 27, 1925, and Hoyt, No. 1,508,394, for a fastening inserting machine, granted September 16, 1924. Both inventions concern themselves with improvements in machines for lasting heel seats of shoes of various shapes and sizes. Of the two the McFeely combination is the more comprehensive, clearly the more important in the development of the art, and its adjudication more vital to the determination of the controversy, since Hoyt is concerned with a relatively minor improvement in machines of the type embodied in the McFeely invention.

In the McFeely machine, as it is described in the specification and the evidence, and as demonstrated, the shoe upper, with its lining and counter assembled on a last, is placed on a pivoted jack with the bottom uppermost. An insole has been tacked to the last and the upstanding edges of the upper at the toe and shank of the shoe have already been flattened down and attached to the insole. The heel seat lasting, which is to be done on the machine, involves conforming the upper materials snugly to the contour of the heel end of the last by an operation called "wiping," which consists of flattening the marginal portions of the upper, counter and lining down on the insole and then fastening them in lasted position. To accomplish this the jack is swung toward the machine into a "heel band" and under what is known as a "hold-down," which is a vertical movable member that governs the vertical position of the shoe in the machine. The machine is placed in motion by tripping

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a treadle, and power operations take place in following sequence. The jack is pulled farther into the machine to seat the shoe snugly against the heel band, the shoe bottom is pressed against the hold-down so that the last and shoe are forced downwardly to place the insole below the plane of elements called "wipers." The wipers are then automatically advanced to close over the bottom of the last to break down the upstanding edges of the upper, counter and lining over the insole surface. The wipers are then retracted and the first wipe is complete. The jack and last are then pulled back tighter into the heel band and forced upward more firmly against the hold-down to position the shoe with the surface of its insole substantially in the plane of the wipers. These are now caused to again advance and close for a second wipe which is called "ironing." Retraction of the wipers again follows, and upon their final advance they confine the lasting allowance against the insole while tacks are automatically driven through the materials to hold them in place on the insole. The heel band then opens, the jack is lowered, the wipers and tackers are withdrawn and the jack swings out of the machine so that the operator may remove the shoe and present another assembly for lasting.

While these operations require extended description the entire sequence is completed in the fraction of a second and too swiftly for the eye to follow. It is said that the heel seat lasting operation is a delicate and important one, and that there must be an accurate fit so that the heel of the shoe may subsequently be applied without any looseness in the upper material. It is to attain this objective that there must be the first wiping operation with the wipers somewhat above the plane of the insole and the second wiping or ironing operation in substantially the same plane.

It is contended by the appellant that essentially all of the elements of the McFeely patent are old, that they are combined and function in manner taught by the prior art, and that what the inventor claimed as improvements

Opinion

were merely details in a complicated machine, the equivalents of which have been used in the same way for the last sixty years. It points to the patent to Copeland, No. 244,714, as the basic patent in a crowded art, and as disclosing the first machine for automatically performing heel seat lasting by wiping the leather of the heel and toe across the bottom of the last while tacks are inserted to hold the leather in position after it has been wiped. It traces the development of the art, since Copeland, through the patent to Lombard, No. 524,445, as one describing a mechanism for automatically adjusting the position of wipers to varying contours with means for adjusting the machine for different sizes of shoes; through the patent to Eaton, No. 596,323, which describes a machine of the class known as "bed lasters" wherein tacking is performed by hand instead of carrying the tackers on the wipers; through the patent to Pym, No. 1,368,868, another "bed lasting" machine without automatic tackers, and urges that the bed lasters do everything that the patent in suit performs and include means for a predetermined adjustment of the wipers; that the patent to Plant, No. 958,280, discloses in precise detail the means of the patent in suit for adjustably supporting the heel band, and that Brock, No. 1,188,616, demonstrates that it is old to provide means for applying pressure to the back and sides of the heel band for adjustment purposes. Principally, however, is reliance placed by the appellant upon an earlier patent to McFeely, No. 1,129,881. This is claimed to be a complete anticipation in all essential elements, in manner of their functioning, and in results. It is now expired and the appellant states the fundamental issue here to be whether the appellee may now extend its monopoly by substituting in an old construction equivalent mechanical details also old in the art and so to get a new patent for another 17 years. Its own machines, the appellant urges, do not infringe because they follow the plaintiff's own expired McFeely and Pym patents, and likewise because they are fundamentally different in construction and operation from the McFeely patent in suit.

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The origin of the defendant's machines, the circumstances of their appearance in this country, and the efforts made to avoid the charge of infringement after notice, are illuminating and raise inferences in respect to infringement which may not be dispelled except upon clear and convincing evidence of fundamental differences between them and that disclosed in the second McFeely patent. The defendant purchased four "Calzera" automatic machines from Moenus Machinen-fabrik in Frankfurt, Germany. It seems reasonably clear, from the general appearance of the accused machines, and as they are depicted and described in the Moenus catalog, and from the evidence of the defendant's witness Kath, a mechanical engineer engaged on patent work for the Moenus Company who came from Germany to help in the preparation of the trial and whose duty it was to study shoe machinery patents including those granted by United States, and who saw one of the McFeely machines in Germany and was familiar with the patent drawings and specifications, that the Moenus machines are copies of the commercial construction of the plaintiff. They followed this construction even in minor detail not shown in the patent, and the improved results claimed for it by the inventor over machines of the prior art are enthusiastically proclaimed in the Moenus catalog. After notice of infringement was served upon the appellant, there were removed from its machines certain wing screws, clips and a form of adjustable stop, some upon the advice of counsel and all in the hope clearly indicated that the changes might avoid a finding of infringement.

These implications do not, of course, either preclude or excuse us from detailed consideration of alleged differences between the accused devices and the disclosures and claims of the patent, or of their identity. Such consideration as we are able to give to the various elements and their function in tracing them through the maze of drawings and photographs that have been submitted to our inspection, requires a holding of infringement if the claims

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be valid. The wipers and tackers of the accused structures are fixedly connected as in the patent. While the tacking in the infringing devices is through the wipers, whereas McFeely disclosed tacking at a predetermined distance beyond the edge of the wipers, his claims are without limitation in this respect and the choice is but between known expedients in the art, nevertheless it is but another indication of copying that the assailed machines follow the commercial practice of the plaintiff rather than the preferred method disclosed by the inventor. The fixed connection between wipers and tackers is, however, present. Although in the defendant's machines the wipers and tackers are bolted to carrier plates, these are within the language of claims 6 and 85 printed in the margin,¹ as "tacking units co-operating with the wiper plates and having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment," and "tackers connected to the wipers for preliminary adjustment with them and for power effected movement with the wipers."

Claims 23 and 91, likewise printed in the margin,² are

¹ Claims 6, 85—

6. A machine of the class described having, in combination, end lasting wiper plates for closing over a last bottom, manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last, means to effect bodily and swinging movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened on the bottom of the last, and tacking units co-operating with the wiper plates and having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates.

85. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for effecting a preliminary adjustment of the wipers to the contour of the shoe, additional power means for subsequently operating the wipers, and tackers connected to the wipers for preliminary adjustment with them and for power effected movement with the wipers subsequently over the shoe.

² Claims 23, 91—

23. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member connected to the lower edge of said

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also infringed. Such infringement is not avoided by the removal of the wing screws and clips of the accused organization prior to suit, for here is not a case of alleged infringement, inadvertent or of unsubstantial character and long-abandoned as led to the denial of an injunction in *Lester v. American Rolling Mill Co.*, 95 Fed. (2d) 772 (C. C. A. 6). Likewise in general claim 42, also printed in the margin,³ infringed. While there was sharp conflict in the testimony, the District Court found that the element "manually adjustable means for determinately varying the amount of vertical movement of the hold-down" was

clamping member at its rear closed end, means to support the lower edges of said clamping member at opposite sides, pressure members arranged to engage the opposite sides of the U-shaped clamping member at points above its lower edges and to press said sides inwardly to force the end of the upper in close conformity to the last, manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members, means to operate said pressure members to clamp the shoe upper, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.

91. In a machine of the class described, the combination with last and shoe positioning means, of an end embracing band for clamping the upper round the lateral periphery of an end of the last, supporting means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe, and means connected to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means.

³ Claim 42—

42. A machine of the class described having, in combination, clamping means to embrace one end of a last and shoe, end wipers positioned to operate on the edges of the upper at said end of the shoe, a hold-down mounted for vertical movement and position to engage the bottom of the last and shoe, a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down, power operated mechanism effective to move said support forcibly to press the last and shoe against said clamping means and hold-down and to actuate the clamping means, mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers, mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe, the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidentally correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers, and the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last and shoe, and manually adjustable means for determinately varying the amount of vertical movement of the hold-down.

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present at the time of plaintiff's inspection, and moreover that the substitution for this element fulfilled the same function. In consideration of inferences that support the findings of the District Judge, who, having seen and heard the witnesses, has superior advantages for ascertaining the truth, we are unable to say that his finding in this respect is clearly erroneous.

But obvious as infringement of a patent may appear to be, the utilization of its disclosures pays no tribute to its validity, however much it concedes utility, for the copying of a patented thing may, in the last analysis, be but a challenge to monopoly boldly asserted by the infringer on behalf of himself and the public, and an invitation to the patentee to vindicate his patent by judicial test. Retreat, however, in the face of notice of infringement wears a different aspect, and if not precisely a concession of validity, it implies at least some doubt as to the soundness of the challenge and the faith of the challenger in the strength of his position.

The appellant urges the first McFeely patent as complete anticipation of the claims of the patent in suit. It is without doubt its most pertinent reference. But the first McFeely patent was before the patent office for consideration on the second application and there is no indication that McFeely experienced unusual difficulties in the pursuit of the patent in issue. We are, therefore, obliged to give consideration to the rule that "one otherwise an infringer who assails the validity of a patent, fair upon its face, bears a heavy burden of persuasion, and fails unless his evidence has more than a dubious preponderance. *Philippine Sugar E. D. Co. v. Philippine Islands*, 247 U. S. 385, 391; *Radio Corporation v. Radio Laboratories*, 293 U. S. 1, 8. To the presumption of validity that attaches to a granted patent, where the most pertinent prior art has been cited against it in the patent office, there must probably now be added the force of a growing recognition of finality that is generally being accorded to administrative determinations supported by evidence, on the ground that the administrative agency

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is expected to have developed an expertness in its specific field beyond what may be expected from the courts wherein adjudications range the whole field of human controversies. It is true, of course, that in the most strict sense, the granting of a patent is not, except when an interference is declared, the result of an adversary proceeding, as in usual administrative determinations of agencies exercising quasi-judicial functions. Nevertheless, it wears, in the broader sense, an adversary aspect, since patent office examination protects the public against unmerited monopoly, and so the public, as represented by the examiner, is always impliedly in adversary position to the application just as it is ever a third party to an infringement suit. *Kellogg v. Michigan Bell Telephone Co.*, 99 Fed. (2d) 203 (C. C. A. 6). To the inferences in support of validity thus noted, must now be added the implication of correctness that attaches to the findings and conclusions of the District Judge who heard the testimony of the witnesses and saw the machines in operation.

The plaintiff contended below, and the court found, that the McFeely patent in suit was the first automatic heel seat laster which ever went into commercial use. This finding was promptly challenged by the appellant with the request that it be permitted to reopen its case and introduce the file-wrapper of the first McFeely patent, to disclose a supplementary oath of McFeely reciting that a full-sized operative machine was constructed in accordance with the detailed drawings of the patent and had been employed for lasting heel seats in the ordinary course of manufacture of many pairs of shoes; and to disclose that the affidavit was in support of statements by plaintiff's attorneys in pursuit of the application, that the applicant was the first inventor to have produced a successful heel seat lasting machine. While this evidence was rejected in the court below, as offered too late, we have given it consideration, and see no reason for remanding the case to the District Court for such bearing as it may have upon decision. McFeely was not

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the first, as undoubtedly he will not be the last inventor to claim merits for his invention not capable of realization when the patent is fully exploited under competitive conditions of commercial manufacture. The statement in the file-wrapper is little more than what is required to satisfy the patent office that there has been a reduction to practice, without which there is but an unpatentable concept, and while the court's finding in respect to the pioneer character of the second McFeely invention may be somewhat of an over-statement, yet, in the light of the uneventful story of the first McFeely invention, it is substantially accurate.

The first McFeely patent contributed little to the art. But one machine was ever built in accordance with its disclosures and this was sent by the appellee to the Victor Shoe Company for test in the lasting of heel seats under commercial conditions, subject to an arrangement by which no charge should be made to the Victor Company for the work done on the machine, and that any shoes spoiled in its operation should be paid for by the appellee. Although the machine successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory, and after it had been tested for a period it was returned to the manufacturer, was dismantled, and no other similar machine was ever built. On the other hand, the automatic heel lasters of the patent in suit have gone into wide use, the court finding that more than 1200 of such machines had been in operation throughout the world, and both litigants agree that they are complicated and expensive. Between commercial success demonstrated by brief use of a single machine abandoned and not duplicated, and commercial success of the machine of the second patent, there yawns a wide gulf not to be bridged merely by insistence that the second McFeely patent advanced the art but in minor and inconsequential details.

The challenge to the validity of the patent in suit on the ground that it discloses but an aggregation within

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the principles applied in such cases as *Grinnell v. Johnson Co.*, 247 U. S. 426 (the washing machine and wringer), or *Detroit Stoker Co. v. Brownell*, 89 Fed. (2d) 422 (C. C. A. 6) (the stoker and blower), is not persuasive. It is true that many of the features of the claims are old and that an organization, including wipers and tackers, was shown in somewhat primitive form in Cope-land. It is also true that adjustability of elements, thought not in the form shown in the first McFeely patent, is added by the patent in suit to the McFeely type laster, and that mere adjustability by common mechanical expedients may not, of itself, denote the presence of the quality of invention and merit the issue of a patent. But to reduce the second McFeely patent to a mere aggregation of tacker and the old form of bed laster, or to consider it as merely the combination of the first McFeely patent and conventional expedients for adjustment, is to ignore matters of substance.

The patent in suit, unlike its predecessor, provides not only for a preliminary adjustment of the wipers but for the maintenance of the tackers in relation thereto. The tacking occurs before the final withdrawal of the wipers, eliminating the tendency to pull the material to be tacked from its wiped position. The heel band of the first McFeely machine was loose and without support and incapable of sliding movement. Upon the withdrawal of the shoe the heel band was ejected as the result of the release of spring tension upon a plurality of cords. There was absent in the prior McFeely machine, means for adjusting the vertical movement of the hold-down that are present in the patent in suit. Taken together, the improvements in the second McFeely machine gave a new result and a new unitary mode of operation of the entire machine. There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element, as in *Bas-sick v. Hollingshead*, 298 U. S. 415, or *Kodel Elec. Co. v. Warren Clock Co.*, 62 Fed. (2d) 692 (C. C. A. 6).

The patent in suit is not merely the aggregate of laster and tacker, and the disclosed improvements upon

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prior art are not limited to the addition of adjustability. We pointed out in *Detroit Stoker Co. v. Brownell*, supra, that while addition of adjustability alone to a machine or an element thereof which entails no exercise of the inventive faculty will not rise to the dignity of invention, there are patents wherein provisions for adjustability are not only novel but disclose the highest type of inventive thought and solve problems which long defied workers in the art. The respective history of the two McFeely machines place the patent in suit in the second of the categories discussed in the *Stoker* case. It is not to be struck down by the familiar expedient of picking out old elements of the prior art and speculatively combining them when in practice they have never been combined, though the need for a machine of the type disclosed had long been recognized. The claims of McFeely in suit are valid and infringed.

It may be of little importance in this controversy to adjudicate the validity of the Hoyt patent after upholding validity and infringement of the claims of McFeely, since the four machines of the appellant are accused of infringing both, and it is not probable that royalties would be cumulated. However, recent experience, *Cleveland Trust Co. v. Schriber-Schroth Co.*, 108 Fed. (2d) 109 (C. C. A. 6), dictates it to be the more prudent to adjudicate all issues submitted to us.

Hoyt concerns itself specifically with improvements in means for adjustment of the heel band in machines of the McFeely type. Claims 19 and 21, printed in the margin,⁴

⁴ Claims 19, 21.

19. In a machine of the class described, the combination of fastening inserting means, means for positioning a shoe in relation to the fastening inserting means comprising a substantially U-shaped flexible band operable to clamp the heel end of the shoe, an operating member and unyielding connections between said member and the band for forcing the ends of the band against the shoe, and separate yielding means operating on each side of the band adjacent to the bight of the band to press such portions of the band against the shoe.

21. In a machine of the class described, the combination of fastening inserting means, means for positioning a shoe in relation to the fastening inserting means comprising a substantially U-shaped flexible band operable to clamp the heel end of the shoe, means for supporting the band, devices comprising arms loosely mounted on the supporting means, and means normally operative to press said devices against the band.

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are in suit and cover subject matter corresponding to that which is included in claims 23 and 91 of McFeely. The pressure plates of McFeely, operating upon the heel band, are capable of yielding by reason of opposed springs. These Hoyt has omitted. Whereas McFeely employed a unitary spring at the bight end of the band, Hoyt uses separate arms loosely mounted, carrying pressure members rendered yieldable by springs. Yieldability is thus transposed from the bight ends of the band to its center. This simple reorganization of the heel band mechanism may afford greater adjustability or flexibility of the member, but it requires no reorganization of the machine nor any new mode of operation, and whatever improvement may result is due entirely to the improved element and cannot give rise to valid claims embracing the entire lasting mechanism. The principle sought to be applied by the appellant to McFeely, and by us in respect to it, rejected, is clearly applicable to Hoyt under the rule of *Bassick v. Hollingshead*, supra; *Lincoln v. Stewart-Warner Corp.*, 303 U. S. 545, 549; *General Motors Corp. v. Rulsam*, 65 Fed. (2d) 217, 220 (C. C. A. 6); *Detroit Stoker Co. v. Brownell*, supra. The Hoyt claims in suit are invalid.

The decree below will be amended to strike therefrom the adjudication as valid and infringed claims 19 and 21 of Hoyt, and directing as to them that the bill be dismissed. So amended the decree below is affirmed.

Judge Hamilton dissents.

UNITED STATES CIRCUIT COURT OF APPEALS FOR THE
SIXTH CIRCUIT

I, J. W. MENZIES, Clerk of the United States Circuit Court of Appeals for the Sixth Circuit, do hereby certify that the foregoing is a true and correct copy of record and proceedings in the case of *The Williams Manufacturing Company v. United Shoe Machinery Corporation*, No. 8438, as the same remains upon the files and records of said United States Circuit Court of Appeals for the Sixth Circuit, and of the whole thereof.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the seal of said Court at the City of Cincinnati, Ohio, this 17th day of July, A. D. 1941.

J. W. MENZIES,

*Clerk of the United States Circuit
Court of Appeals for the Sixth Circuit.*

(SEAL)

Vol. II
TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 332

**THE WILLIAMS MANUFACTURING COMPANY,
PETITIONER,**

vs.

UNITED SHOE MACHINERY CORPORATION

**ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT
OF APPEALS FOR THE SIXTH CIRCUIT**

PETITION FOR CERTIORARI FILED AUGUST 1, 1941.

CERTIORARI GRANTED OCTOBER 20, 1941.

United States Circuit Court of Appeals

FOR THE SIXTH CIRCUIT.

THE WILLIAMS MANUFACTURING COMPANY,
Appellant,
vs.
UNITED SHOE MACHINERY CORPORATION,
Appellee.

TRANSCRIPT OF RECORD VOLUME II.—EXHIBITS

On Appeal From the United States District Court for the
Southern District of Ohio, Western Division.

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Oct. 27, 1925.

1,558,737

R. F. McFEELY

LASTING MACHINE

Original Filed Aug. 16, 1916

6 Sheets-Sheet 1

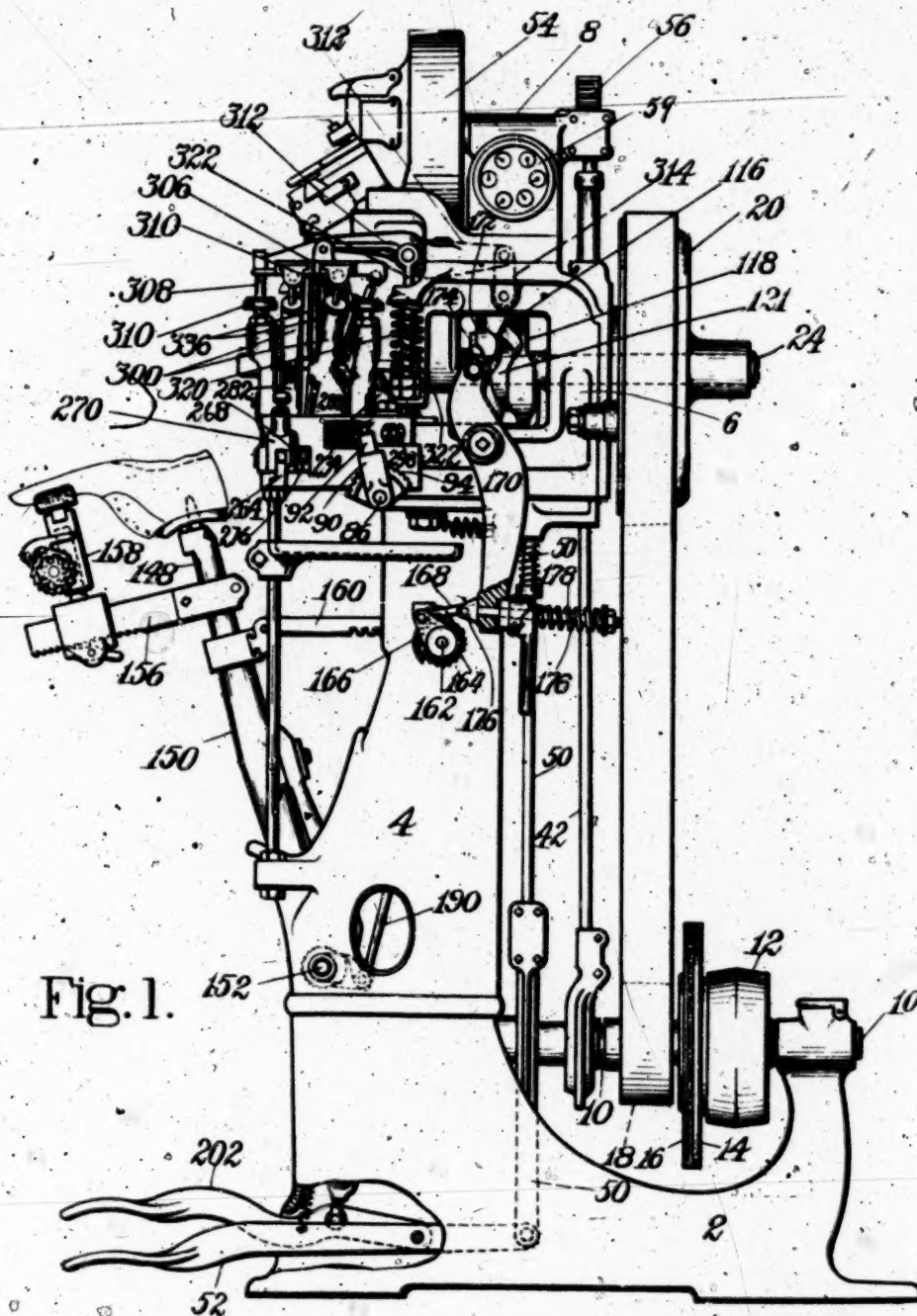


Fig. 1.

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1,558,737

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LASTING MACHINE

Original Filed Aug. 16, 1916

6 Sheets-Sheet 2

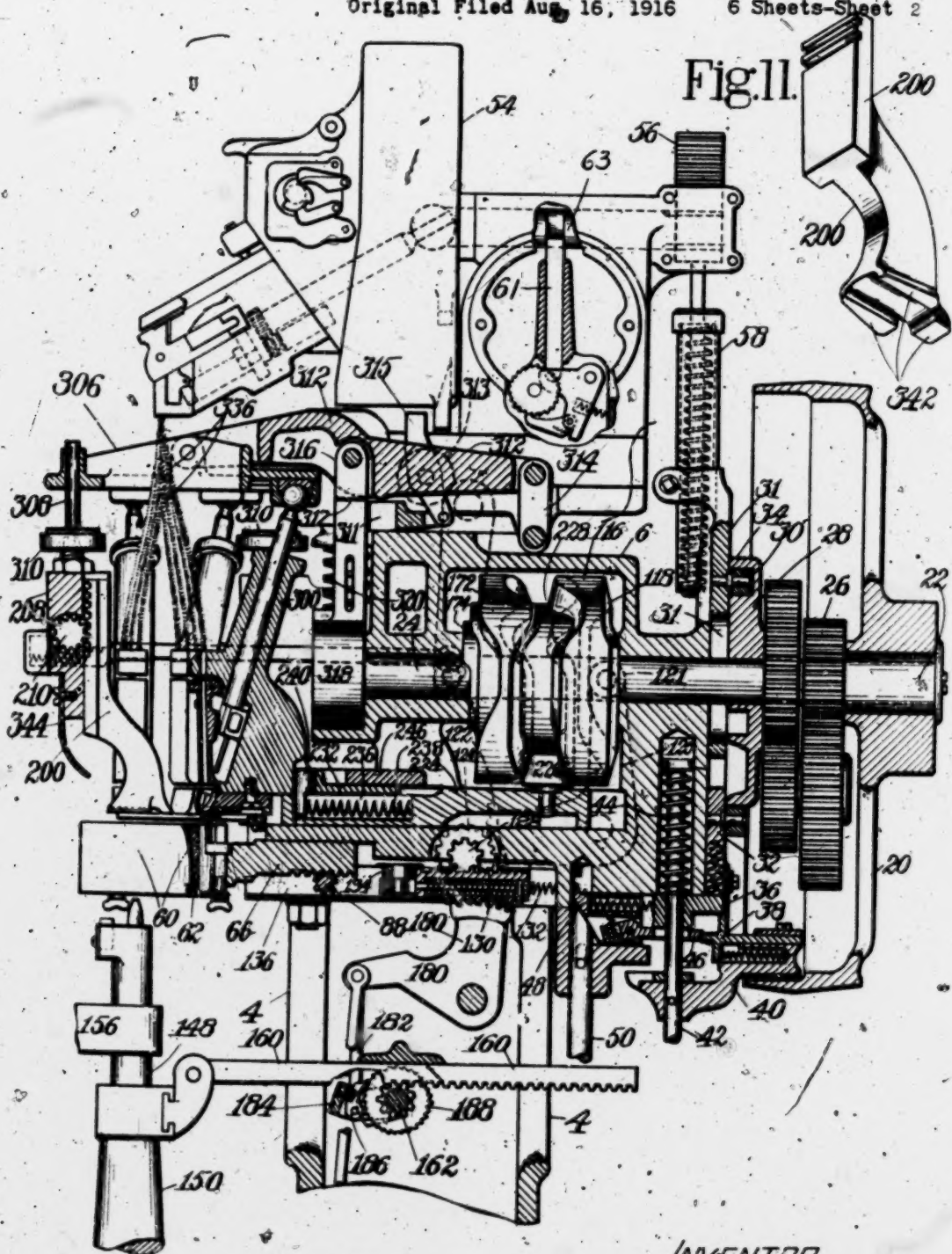


Fig. 2.

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LASTING MACHINE

Original Filed Aug. 16, 1915

6 Sheets-Sheet 3

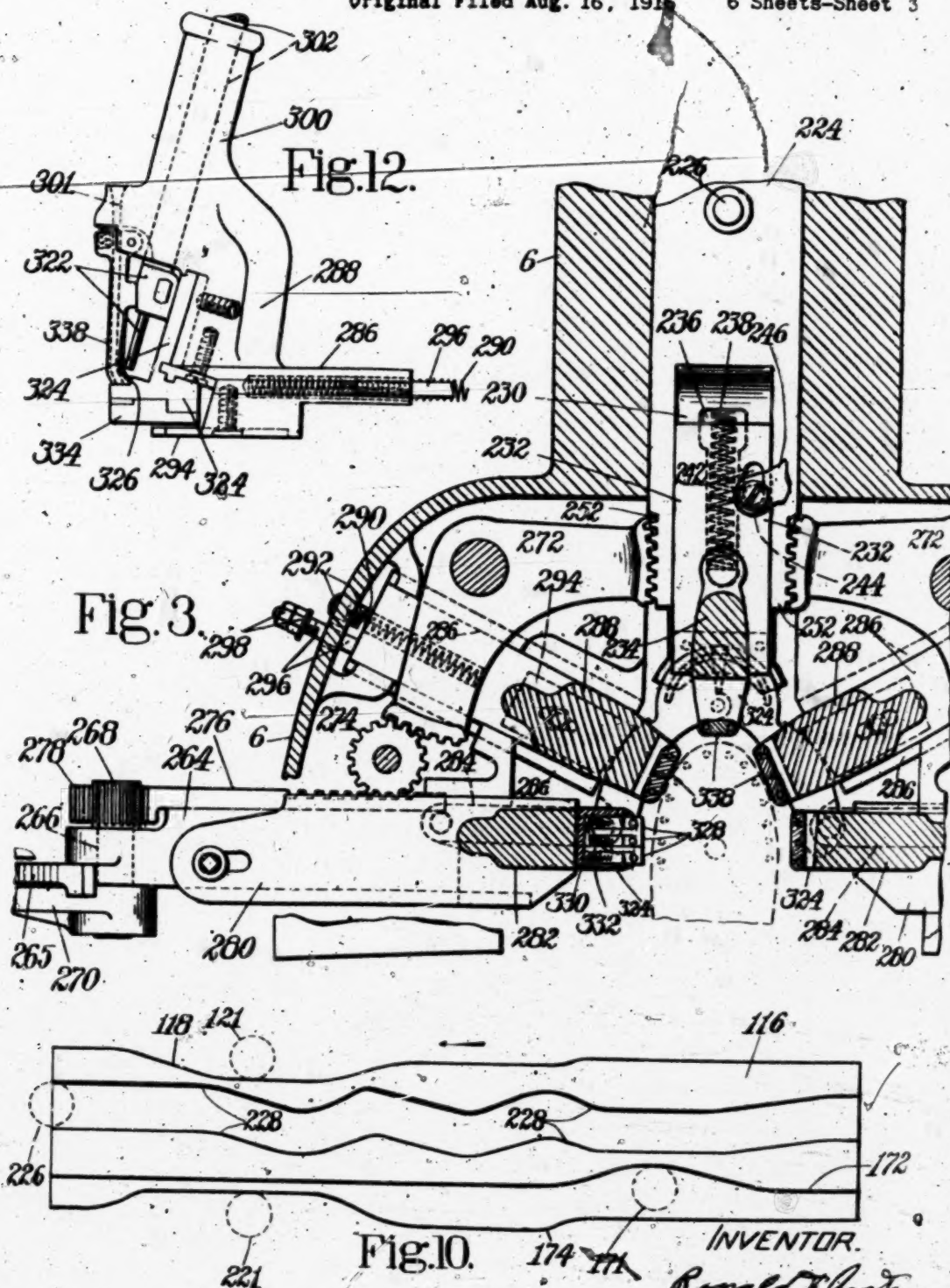


Fig. 10.

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1,558,737

LASTING MACHINE

Original Filed Aug. 16, 1916

6 Sheets-Sheet 4

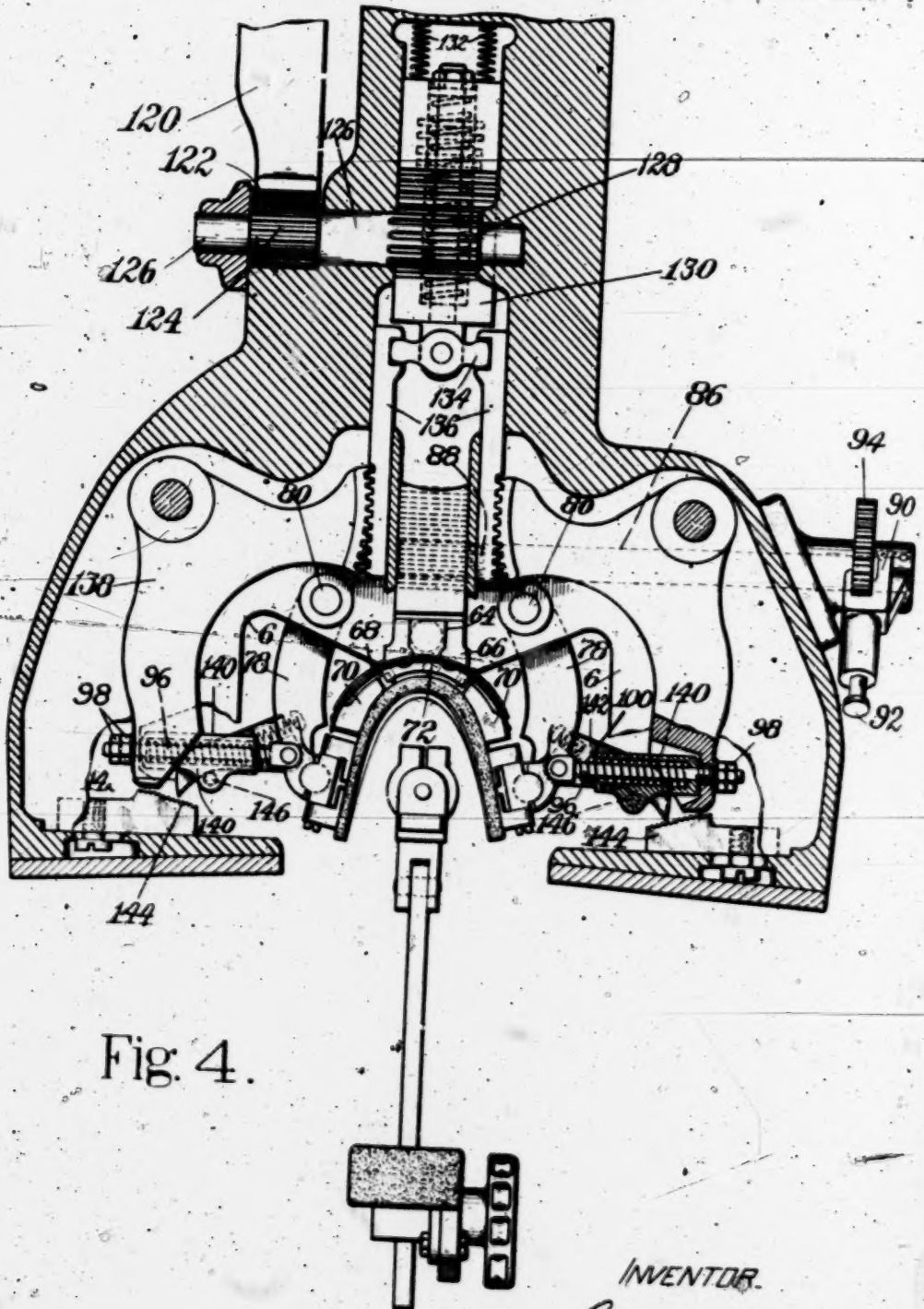


Fig. 4.

INVENTOR.

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Oct. 27, 1925.

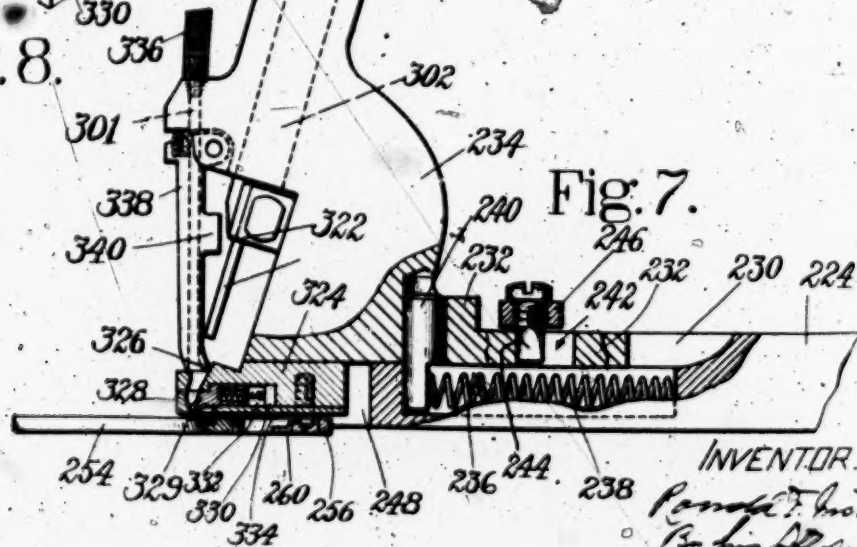
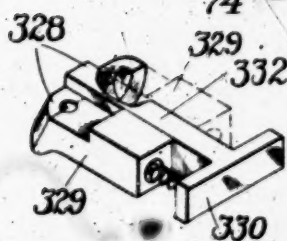
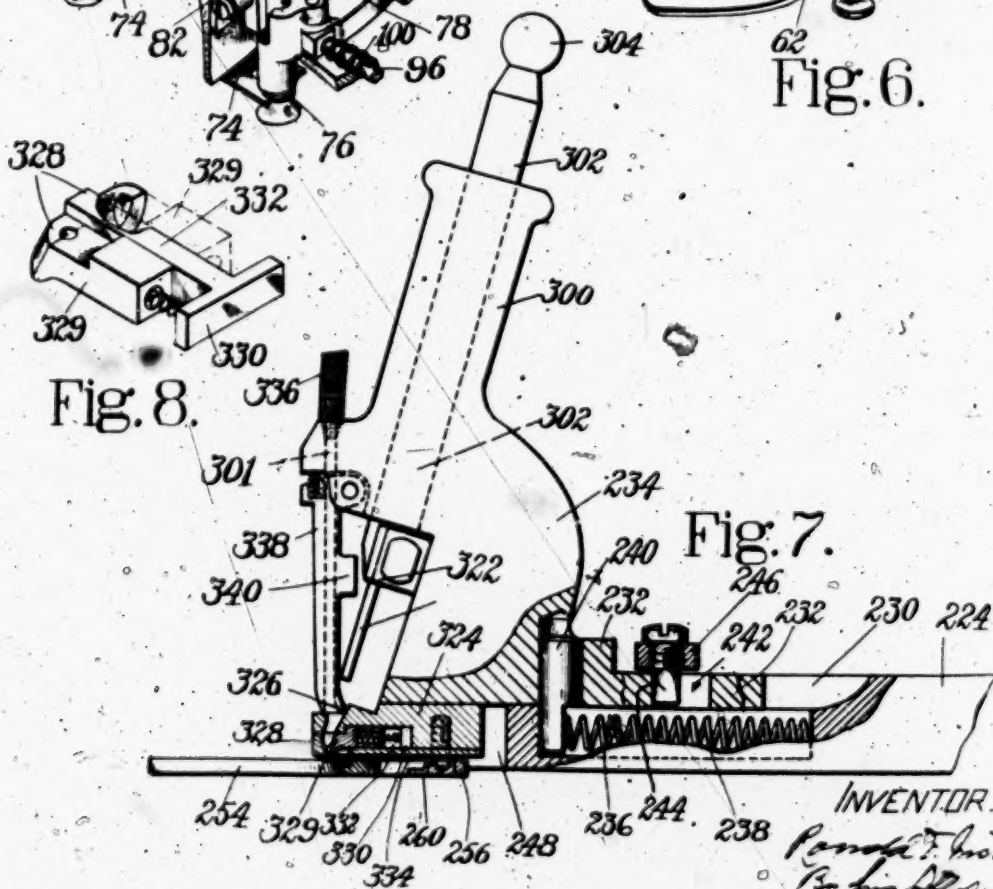
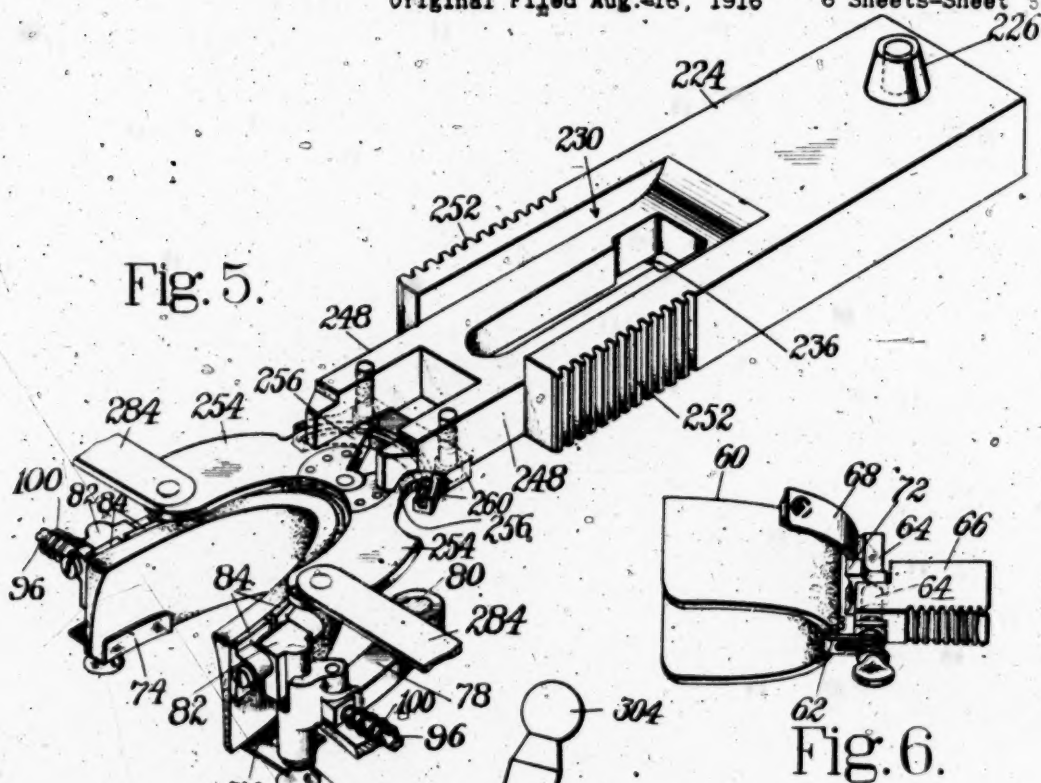
R. F. McFEELY

1,558,737

LASTING MACHINE

Original Filed Aug. 16, 1916

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Oct. 27, 1925.

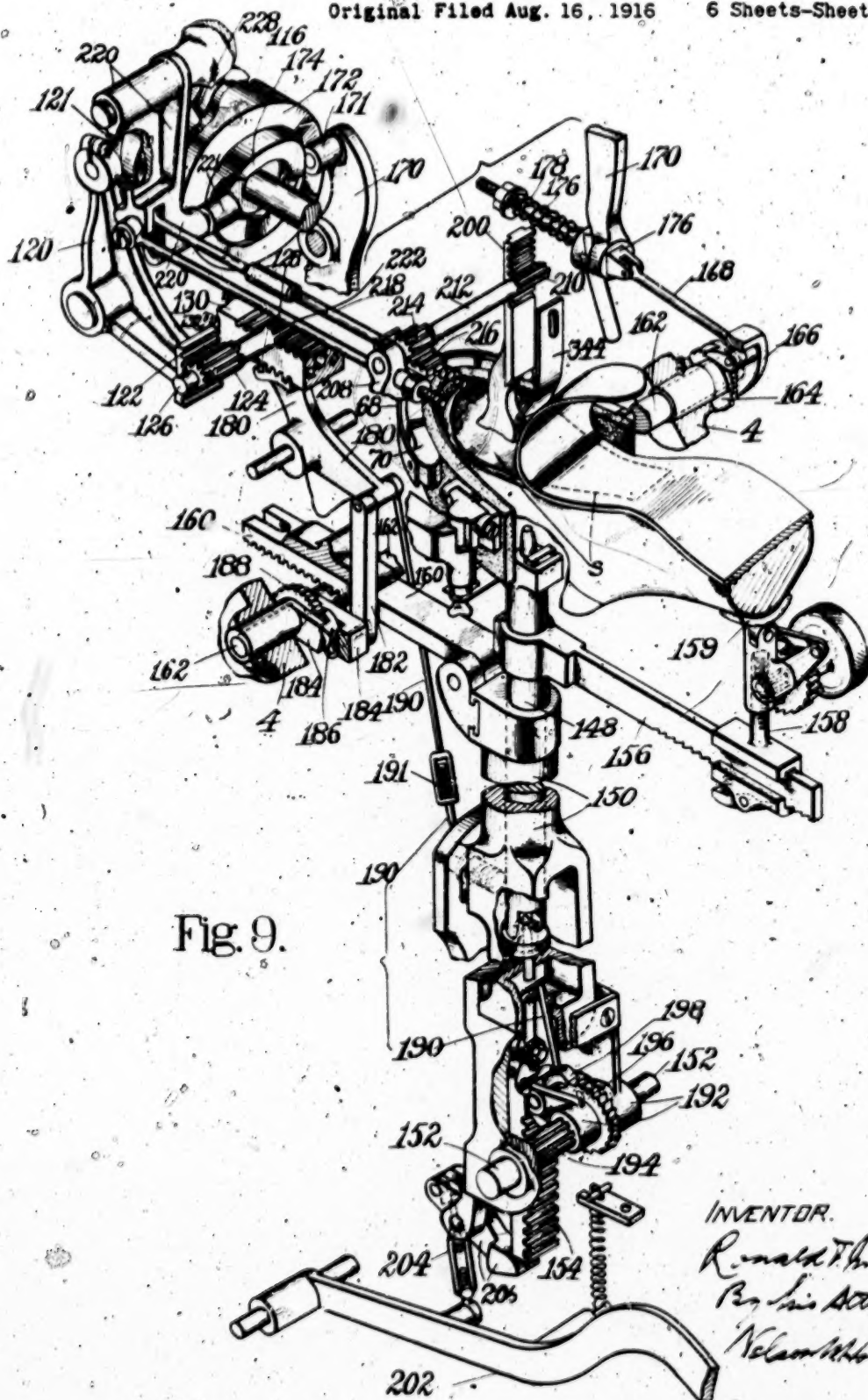
R. F. McFEELY

1,558,737

LASTING MACHINE

Original Filed Aug. 16, 1916

6 Sheets-Sheet 6



the heel seat and as the tackers are operated to fasten the upper.

As a further provision for improving the quality of the lasting, the invention provides a novel organization whereby the upper about the end of the shoe is subjected to a tightening or "upwiping" operation height-wise of the shoe. This is effected in the construction shown by automatic depression of the shoe relatively to the heel embracing band prior to the overwiping operation of the wipers, thereby drawing the upper tightly about the end of the last toward the edge of the heel seat before its margin is wiped inwardly over the heel seat. Such depression of the shoe, in the construction shown, is effected by a holddown which engages the heel seat face of the shoe and which serves thereafter, in co-operation with the shoe support, to control the shoe during the remainder of the cycle of the machine in the course of which the shoe is uplifted, as hereinbefore explained, between repeated operations of the wipers. It is also a desirable characteristic of the illustrated machine that in such uplifting of the shoe the band moves with the shoe by reason of the manner in which it is supported, thereby avoiding any tendency for the band to wipe the upper reversely from the edge of the heel seat which might counteract in some degree the beneficial results of the upwiping operation. To position the shoe initially for the lasting operation, the machine herein shown has manually operated means for jacking the shoe upwardly against the holddown prior to the starting of the machine, and the provision of such means for presenting the shoe, in combination with power means for subsequently controlling the shoe, constitutes another feature of the invention.

As a further feature, the invention provides a novel construction of end embracing wiper mechanism including, among other improvements, a novel and convenient means for effecting relative adjustment of the wipers to conform them substantially to the shape of different shoes, for example to the different contours of the heel ends of right and left shoes. Such provision for adjustment is combined, in the construction shown, with means for imparting to the wipers positively an advancing and closing movement of predetermined extent, thereby insuring uniformly effective results on heavy shoes which offer comparatively great resistance to the overwiping operation.

Still other important features of the invention are to be recognized in a novel combination and arrangement of wiper and tacker mechanisms, the term "tacker" being used herein for convenience of designation, although it will be understood that the invention is not limited specifically to means for driving fastenings in the form

of tacks. The machine illustrated includes in its organization what may be conveniently termed "side" tackers, arranged to drive their tacks near the front end of the heel seat, an "end" tacker at the extreme end of the shoe, and "corner" tackers between the side and end tackers, the several tackers being moved inwardly under control of the wipers. For the purposes in view, the side tackers in the construction shown are positively connected to the wipers to be moved inwardly by the wiper operating means to predetermined tacking positions, while the end and corner tackers, where the gather in the margin of the upper oppose comparatively heavy resistance to the advance of the wipers and tackers, are permitted to yield in response to such resistance while the wipers continue their inward movement, this being particularly advantageous in the first operative movement of the wipers for gathering the margin of the upper and laying it over the heel seat. The connection of the side tackers to the wipers results in their adjustment with the wipers when the wipers are adjusted as hereinbefore explained. The invention also provides for adjustment of the different tackers relatively to the wipers, as may sometimes be desirable for varying the tacking positions, the adjustments for the end and corner tackers determining the limits to which these tackers are moved by their yielding operating means. It is a further desirable characteristic of such limiting means that these tackers are prevented from moving too far inwardly during the first two advancing and closing movements of the wipers, thus avoiding interference with the holddown which otherwise might be engaged by these tackers.

The above and other features of the invention, including novel shoe end clamping means, novel means for turning and holding back the heel end of the sole of a turn shoe, and various details of construction and combinations of parts, will now be more particularly set forth by reference to the accompanying drawings and pointed out in the claims.

In the drawings;

Fig. 1 is a view in side elevation of the assembled machine;

Fig. 2 is a vertical section through the head of the machine, the parts being shown on an enlarged scale;

Fig. 3 is a fragmentary horizontal section on an enlarged scale taken along an irregular line through the lower portions of the tack holding and driving units;

Fig. 4 is a horizontal sectional view through the machine taken on a line below the tack holding and driving units to disclose the heel clamping band and its operating connections;

Fig. 5 is a detail of the heel clamping

band, wiper plates and their operating slide in assembled relation;

Fig. 6 is a detail of the rear end support of the clamping band;

Fig. 7 is a side elevation, partly in section, of the heel end tack holding and driving unit mounted on its operating slide with the heel wipers in position on the slide;

Fig. 8 is a detail of the tack holding and driving unit construction;

Fig. 9 is a fragmentary perspective view of the last jack and hold-down with their operating mechanisms;

Fig. 10 is a plot of the cam paths on the main cam wheel;

Fig. 11 is a detail of the hold-down; and

Fig. 12 is a side elevation of a corner tacking unit.

As to general structure, power transmission and automatic control the machine shown herein corresponds to the machine shown in my Patent No. 1,129,881, previously referred to.

The machine is provided with a base 2 from which rises a column 4 terminating in a head 6 carrying the heel seat lasting mechanism. This head is crowned by a frame 8 which carries a tack hopper and delivering mechanism.

A driving shaft 10 is journaled in the base 2 of the machine frame and carries a fast pulley 12 which is driven by a belt from a suitable source of power such as the usual line shaft, and is provided with a friction clutch disk 14. A second pulley 18 is loosely mounted on the shaft and is provided with a co-operating clutch disk 16. This second or loose pulley is connected by a belt with a pulley 20 fastened to a sleeve 22 freely rotatable upon a driven shaft 24 and carrying a gear 26 at its inner end with the pulley 20. This gear drives the shaft 24 through suitable intermeshing reducing gears as shown in Fig. 2.

Adjacent to its rear end, shaft 24 carries a cam disk 28 having a cam groove 30 formed in its front face into which extends a roll carried by a reciprocating frame 31 having a yoke formation to straddle the shaft 24.

The movement of the shaft 24 is controlled by mechanism which may be substantially like that shown and claimed in my prior United States Letters Patent No. 791,986 of June 6, 1905. This mechanism need not be here more fully described than to state that a clutch operating rod 42 carries near its upper end a brake block 40 co-operating with the inner face of pulley 20, with a spring 44 operating against its upper end and normally tending to move it upwardly to release the brake 40 and throw in the friction clutch 16 on shaft 10. The cam wheel 28 has a peripheral cam face 34 operating against a roll on a sliding block 32

to cause a trigger plate 36 to engage a sliding spring latch 38 on the brake block to hold the brake against the pulley and against upward movement through the action of spring 44 until the latch is moved away from plate 36 by a finger 46 carried by a wedge block 48, this block being moved to operate the finger and release the latch and brake through a rod 50 operated by a treadle 52. Toward the end of a revolution the plate 36 is permitted to rise by the cam 34, the latch 38 moving over beneath the plate and being subsequently depressed by the operation of cam 34 against the plate to move the brake block 40 and rod 42 downwardly to disconnect the clutch and stop the driven shaft 24 at the end of the revolution.

The machine includes suitable tack feeding mechanism which may be and is shown herein as corresponding to the tack feeding mechanism of Patent No. 1,129,882 of March 2, 1915, except that, as shown, fourteen tacks are employed and the number of tack pockets in the receiving plates and the number of raceways and slots, are varied accordingly.

Briefly, the tacks are fed from a hopper 54 which is oscillated by a rack bar 56 through a yielding spring connection 58 with the upper end of the sliding frame 31 reciprocated through the cam 30. The tacks gravitate down a series of seven raceway grooves from the hopper to a separating slide which is arranged to be reciprocated twice in each cycle of the machine to deliver fourteen tacks to a receiving plate having fourteen tack pockets therein from which the tacks are discharged into conductor tubes leading to tack holding and driving units. An indicator such as is usually employed with machines of this character, is located at 59 (Fig. 1) and may be of any usual form. As shown (Fig. 2) the indicator mechanism is actuated by a plunger 61 connected to an eccentric portion of the hopper shaft 63.

The conductor tubes, as previously stated, lead to certain tack holding and driving units. These units are mounted within the head 6 of the machine frame and co-operate with wiping mechanism which is arranged to wipe down the marginal portions of the shoe upper over the edges of the insole at the heel end of the shoe, the tacks being subsequently driven. The last with the upper and insole mounted thereon is carried by a swinging vertically movable jack and is held in position relatively to the wiping and tack driving mechanism with its heel end within certain heel clamping means, which, together with the tack holding and driving units, wiping mechanism, and jack, is controlled from the driven shaft 24.

This heel clamping means includes a sub-

stantially U-shaped integral band 60, of leather or other flexible material having a slotted clip 62 attached to its rear lower edge and supported by and guided for vertically upward movement on the shank of a stud 64 secured to the forward end of a racked slide 66 (see Fig. 6). The upper end of the stud supports a curved flexible steel band 68 having concave contact blocks 70 on its inner face arranged yieldingly to engage the back of the band 60 at opposite sides of its longitudinal median line flexibly to conform the rear of the band to the end of the last and shoe upper. A positive back stop between the upper and lower edges of the band and substantially in the longitudinal median line thereof is provided in the form of a block 72 carried by the stud 64 and having a concaved band engaging face substantially in the vertical plane of the corresponding contact blocks 70.

The forward ends of the clamping band are slidably supported by flanged clips 74 clamped to vertical studs 76 at the forward ends of links 78 pivoted at their rear ends to the head 6 (Fig. 4) at 80. Blocks 82, swiveled on studs 76, carry complementary pivoted plates 84 contacting with the opposite side faces of the clamping band adjacent to its upper edge. Pressure acting against the links 78, will, through these plates 84, cause the band to be clamped about the counter portion of a shoe upper positioned within the band. Movement of the band relatively to the pressure plates 84 will vary the pressure point on the band so that by adjustment, the clamping pressure may be applied substantially at the same relative point on all lasts and shoes. The horizontal pivot mounting for the contact plates 84 causes said plates automatically to conform to the contours of the side faces of the lasts.

Adjustment of the band is secured by manually effected movement of the racked slide 66. This slide is suitably guided in the head 6 for movement toward and from the front of the machine. A spindle 86 is journaled in and extends transversely of the head and has a toothed end 88 co-operating with the racked slide, its opposite end projecting beyond the head 6 and carrying an arm 90 provided with a spring pressed pawl 92 co-operating with a stationary arcuate ratchet 94. Obviously, on pulling the pawl from engagement with the ratchet, the arm 90 and spindle 86 may be swung to move the racked slide and effect desired adjustment of the clamping band in the manner previously described. The clamping band 60 in its rearmost position is adapted to accommodate a heel end of maximum size. Adjustment of the band forwardly positions it for smaller sizes, the adjustment for which may be indicated on the ratchet 94. In such

adjustments the contour of the band is determined by the members 74 and 84 relatively to which it is slidably movable.

The driven shaft 24, at a point within the head 6, carries a cam wheel 116 having its rear face formed as a cam 118 constructed and arranged to control the clamping and releasing movements of the heel band 60, and automatically to effect and control movements of the last-carrying jack in the manner later to be described. A bell crank lever 120 (Fig. 9) is pivoted at one side of the head 6 and carries at one end a roll 121 arranged to engage the cam 118, its other end being formed as a segmental rack 122 engaging and arranged to rotate a gear 124 carried at the outer end of a spindle 126 whose inner end is formed as a pinion 128 and engages with a rack on the upper face of a racked plate 130 positioned and guided in the head 6 for reciprocation in a horizontal plane slightly below the plane of the racked slide 66 as shown in Fig. 2.

The racked plate 130 is normally pressed outwardly and the bell crank roll 121 is held against cam 118 by means of coiled springs 132 acting against the plate. An equalizer 134 is pivotally mounted on the front end of a stem carried by and extending through the racked plate 130 and yieldingly held against forward movement relatively to the plate by a spring. The equalizer engages notches in the sides of opposed rack bars 136 guided within the head 6 for horizontal sliding movement in the plane of plate 130 and positioned forwardly of the plate.

At opposite sides of the heel band, bell crank levers 138 (Fig. 4) are pivoted to the head 6 and have their rear ends formed as racked segments to co-operate with racks formed on the outer faces of the oppositely disposed bars 136 which are reciprocated through the equalizer when the racked plate 130 is reciprocated through bell crank 120 and cam 118. The forward ends of the bell crank levers 138 are formed with transverse sockets within which are seated the outer ends of the tubular housings 140. Link rods 96 have their inner ends pivotally attached to the forward ends of the links 78 and have their outer ends extended through the outer ends of the tubular housings 140 and loosely fitted in and inserted through the perforated ends of the sockets in the bell crank levers 138. The outer extremities of the link rods carry nuts 98 or other suitable means to retain them in connection with their bell crank levers. Coiled springs 100 are seated within the housings 140 between the outer ends of the housings and the forward ends of the links 78 and provide a yielding connection between the bell crank levers 138 and the heel band clamping links 78.

When bell crank 120 turns the pinion 128

will be evident from the plot of the cam paths shown in Fig. 10.

The previously described shoe upper clamping and last jack lifting and swinging movements occur at the beginning of the machine cycle. Preparatory to starting the machine, the operator positions the last with its attached upper and insole on the heel pin of the standard and adjusts the toe rest 158 properly to position the last and upper for engagement by the clamping band 60. He then swings the casing 150 inwardly and at the same time depresses a treadle 202 to raise the standard 148 to position the last at the proper elevation to be engaged by the hold-down 200.

This treadle, adjacent to its inner pivoted end, carries the lower end of an adjustable link 204 whose upper end is pivoted to the rear end of a lifting foot 206 in turn pivoted to the base of the casing 150 and having its front end positioned to engage the base of the rack bar 154 of the jack standard. Depression of the treadle 202, therefore, acts to lift the standard 148 to effect preliminary positioning of the last and upper.

The hold-down 200, previously referred to, is guided for vertical movement in a head 208 (Fig. 2) forming an extension of the head of the machine frame. Adjacent to its upper end, one face of the hold-down is formed with rack teeth meshing with a pinion 210 on one end of a spindle 212 journaled in said head and having a second pinion 214 thereon adjacent to its opposite end. This second pinion is engaged by a rack bar 216 guided in the head 208 and carried at the forward end of an adjustable rod 218 whose rear end is pivoted to one side of an offset bracket on a cam-actuated lever 220 journaled at its upper end on the machine frame and having its lower end provided with a roll 221 co-operating with the inner cam surface 174 on the front face of the cam wheel 116. A second and substantially parallel rod 222 is pivoted to the other side of said offset bracket on the cam-actuated lever 220 and extends through the head 208 (Fig. 9), its end carrying a stop nut adjustably to limit the degree which a coiled spring within the head and acting against the forward end of the rack bar 216 (Figs. 2 and 9), may swing the lever rearwardly to hold the lever roll against the cam 174. By adjusting this stop nut, the position of the roll 221 relatively to cam 174 may be varied and consequently the degree to which the hold-down is moved during the lasting operation. The cam 174 at predetermined times in the machine cycle operates to move the roll 221, swing the lever 220 and move the hold-down foot prior to and coincidentally with the lifting of the jack standard in the manner later to be described.

The upper mounted on the last, when clamped and held in proper position, is operated upon by wiper mechanism to wipe over the marginal edges of the upper standing above the insole, and subsequently a series of tacks are driven in the wiped over edges. Accordingly, the machine bed at a point above the racked plate 130 is formed with guideways to receive a sliding block 224 (Figs. 2, 3 and 5) having projecting upwardly from adjacent to its rear end a roll 226 extending into and engaging the sides of a peripheral cam groove 228 in the cam wheel 116.

The upper face of this block is channeled at 230 (Fig. 5) to form a guideway for the base 232 of an end tack holding and driving unit 234. Below and within the edges of the recess 230, the face of the block 224 is provided with an elongated recess 236 housing a coiled spring 238, the front end of which engages a stud 240 depending from the base 232, and normally tends to move the base with its tack holding and driving mechanism forwardly or toward the shoe.

The base 232 is formed with an elongated slot 242 therein (Figs. 3 and 7) and a pin 244 depending from a bracket arm 246 (Figs. 2 and 3) rigidly secured to the machine frame, co-operates with this slot to limit the cam actuated forward movement of the unit 234 bodily with the block 224, determinately to position the tacks beyond the inner edges of the wipers when the wipers are partially withdrawn rearwardly for the tack driving operation. The coiled spring 238 permits the base 232 to yield backwardly relatively to the block 224 when the upstanding marginal portions of the upper offer substantial resistance to forward movement in the first or "breaking down" movement of the wipers.

The block 224 has its forward end reduced in width and thickness and bifurcated to provide spaced legs 248, (Figs. 5 and 7) through which a tack block 324, secured to the base 232 extends. From a point adjacent to the bifurcated end of the block rearwardly, the sides of the block 224 are formed as racks 252, arranged to operate the wiper mechanism through intermediate connecting devices.

The wiper mechanism includes complementary curved plates 254 having their rear ends formed with rearwardly extending arcuate enlargements 256 having arcuate grooves and tongues, the plates being pivoted together at the inner edge of their rear ends and said grooves and tongues being formed on arcs having the pivot point of the plates as a center. To the under side of the legs 248 of the block 224 a plate 260 is secured, this plate extending forwardly and having a tongue and groove correspondingly curved to receive the ar-

uate grooves, and tongues of the wiper plates, and to support and guide the rear ends of the wiper plates.

The inner edges of the curved wiper plates conform substantially to the general contour of the heel end of a shoe. The rear end of the wiper or wipers formed by these plates is moved forwardly and over the heel of the shoe through cam actuated movement of the block 224 to wipe down that portion of the upstanding margin of the upper. The outer free ends of the wiper plates are moved inwardly toward the sides of the counter and of the bottom of the shoe and last to wipe down the side and corner marginal portions of the upper by mechanism operated through the racked sides 252 of the block 224 and best seen in Fig. 3 of the drawings.

At each side of the wiper at the outer end of its plates, a sliding plate 264 is mounted in the frame of the machine for sliding movement toward and from the shoe and last. As best seen in Figs. 1 and 3, each plate 264 at its outer end projects beyond the machine frame and is formed with an enlargement in which a spindle 266 is journaled, the spindle extending through the plate and its inner end being provided with a pinion 268. Fixed to the outer end of the spindle is a hand lever 270 carrying a suitable spring-pressed pawl (Fig. 1) co-operating with a segmental ratchet 265 extending from and rigid with the end of the plate 264. This lever, pawl and ratchet mechanism may be of any suitable construction and is intended to provide means for adjusting the plate 264 toward or from the sides of the shoe and last.

In one form which this adjustment and the wiper operating means may take, complementary bell crank levers 272 are provided at opposite sides of the forward end of the block 224, the inner end of each lever having an arcuate rack to engage a rack face 252 on the side of the block 224, and the outer end of each lever having an arcuate rack engaging a pinion 274 having a spindle journaled in the machine frame and co-operating with the racked edge of a slide 276 (Fig. 3) whose outer end is formed with a rack face 278 engaged by the pinion 268.

Adjustably mounted upon the top faces of the plates 264 at opposite sides of the machine are the base plates 280 of side tack holding and driving units 282. Links 284 (Fig. 3) are pivotally connected to the under faces of the sliding plates 264 and to the outer free ends of the wipers 254. When the block 224 is moved forwardly through the cam 228, the double-racked bell cranks 272 will rotate the pinions 274 to move the slides 276 inwardly toward the

shoe and, since the pinions 268 are locked against movement by the hand levers and ratchets the sliding plates 264 will be locked to the slides 276 and will be moved inwardly with them, causing, through the links 284, the free ends and corners of the wiper plates 254 to move inwardly and over the upstanding edge of the upper, thereby wiping the upper down over the sides and corners of the heel seat, while at the same time the forward movement of the block 224 will move the rear ends of the wiper plates forwardly over the end of the upstanding upper and will break and wipe it down over the heel seat of the shoe. Obviously, upon reverse movement of the block 224, the reverse action will take place. The adjustment of the base plates 280 on the sliding plates 264 which are directly connected to the wipers, positions the tacks a predetermined distance inwardly of the inner edges of the wipers at the sides of the heel seat, the parts being held in adjusted relation by clamp screws extending through slots in the plates 280 (Fig. 3).

The hand levers 270 with their co-operating ratchets 265 provide means for independently adjusting the outer ends of the wiper plates 254 when the machine is at rest and when the slides 276 are locked by their connected gearing against movement. When the hand levers are moved, the teeth of the pinions 268 will successively fulcrum against the teeth of the racks 278 and will move the sliding plates 264 with the attached side tack holding and driving units inwardly toward the shoe and will, at the same time, through the links 284, move the wiper plates inwardly toward the shoe. Such an adjustment is necessary for affective wiping action on shoes of different sizes and lasts. The location of the adjusting handles 270 on the outside of the head 6 at the front of the machine frame (see Fig. 1) enables this adjustment readily to be effected by the operator. The described adjustment is additionally advantageous in that it permits independent adjustment of the wiper ends to take care of the different contours and swing of different heel seats.

The tack holding and driving unit 234 constitutes the end unit; the tack holding and driving units 282 at the ends of the wiper plates form the side units; and what may be termed "corner" units 288 co-operate with the wiper plates between the end unit and the side units. These corner units 288 (see Figs. 3 and 12) are provided with flanged bases 286, seating in suitable guide-ways formed in the machine frame and extending obliquely to the wiper plates. Each of these units has a longitudinal bore in the outer end of its base plate to receive a coiled spring 290 whose outer end extends into a

socket formed in a tensioning screw 292 seating in the side of the machine frame (Fig. 3). The springs 290 operate against the corner units to move them inwardly to engage the wiper plates and to move them inwardly with the wiper plates when they swing in during the wiping operations.

Each base 286 carries on its under face in the plane of the edges of the wiper plates, an adjustable stop plate 294 having an inclined inner edge to engage the outer edge of its wiper plate and to limit the position of tacks held in said unit to a determinate maximum distance inwardly of the inner edges of the wiper plates. This adjustment is made in assembling the machine. The tack positions may be varied within this maximum by varying the extent to which the springs 290 may move the units 288 inwardly toward and with the wiper plates.

Accordingly, the base plates 286 have rods 296 extending therefrom in the direction of their length out and through smooth bores in the sides of the machine frame. The ends of these rods are threaded and receive stop nuts 298 which engage the frame and adjustably limit the inward movement of the bases 286 and their tack holding and driving units. By adjusting the stop nuts 298 which, as seen in Figs. 1 and 3, are located on the outer sides of the frame, the tacks in said units may be positioned less than the maximum distance inwardly of the wiper edges predetermined by the initial adjustment of the stop plates 294. It will also be evident that the stop nuts prevent the corner tackers from moving too far inwardly, where they might engage the holddown, in the first two advancing movements of the wipers.

Except for the described and illustrated differences in their bases and supports and in the number of tacks held by the units, the body structure of each unit is the same. As to body structure, the end unit 234 may be described as typifying this construction.

Each unit has a column upstanding from its base plate provided at its upper end with an obliquely inclined cylindrical neck 300, the inner faces of the columns being undercut to offset the lower ends of the necks, and the necks having laterally and inwardly projecting offsets at their lower ends bored vertically to form tack channels 301 as best seen in Fig. 7. The necks have bores extending longitudinally therethrough to receive plungers 302 terminating at their upper ends in spherical knobs 304 seating in movable sockets in a hammer head 306 (Figs. 1 and 2) which is guided for vertical movement by a rod 308 upstanding from the head 208 of the frame.

A series of cushioned blocks 310 are adjustably carried by the head 208 and are arranged in the same horizontal plane to en-

gage the base of the hammer head preferably at three triangulated points and limit downward movement of the head and plungers. The mounting for the upper ends of the plungers provides ball and socket joints which enable the plungers to move freely relatively to the head when their units are moved during the wiping operations or are independently adjusted.

A lever 312 has its forward end bifurcated and pivotally connected to the head 306 (Figs. 1 and 2) and its rear end supported by an upstanding link 314 whose lower end is mounted in the machine frame. Intermediate of its ends, the under face of the lever is recessed to receive the upper end of an arm 316 (Fig. 2) which is pivoted to the lever at this point and whose lower end bears upon the periphery of a cam 318 mounted on the forward end of shaft 24. The lower end of the arm 316 is held against the cam 318 by coiled springs 320 (Fig. 1) encircling links 322 depending from opposite sides of the arm and guiding through offsets on the machine frame against which the upper ends of the springs abut, their lower ends acting against abutment nuts on the lower ends of the links. The cam 318 is figured progressively to lift the arm 316 and the head 306, compressing the springs 320, the high point of the cam being reached just prior to the time for driving the tacks, the cam at this point having a sudden drop permitting the compressed springs 320 to snap the head 306 with the plungers 302 downwardly to drive the tacks.

If the shoe being lasted is formed of unusually heavy stock necessitating a double wiping cycle properly to wipe down the edges, or, if for any other reason it is desired to repeat the wiping operation before tacking, the downward tack-driving thrust of the head 306 at the end of the cycle may be prevented and the operator may immediately restart the machine for a second cycle of operations. The arm 316, substantially in line with the lower face of lever 312, is formed with complementary shoulders 317 (Fig. 2) on its opposite side faces. A bifurcated block 311, positioned beneath the lever 312 is arranged to be manually moved during the cycle to embrace the bar 316 with its upper face below the shoulders 317 so that the bar 316, when permitted by the cam 318, will be held against effective downward tack driving movement under the impulse of the compressed springs 320. The block may be moved into such position by a hand wheel 313 (Fig. 2) located on the outside of the head 6 and having a spindle journaled in the head and connected by a link 315 with the rear end of the block 311. The upper end of the link, when the block is moved forwardly to lock the driving head 306, will be positioned to engage lugs on the

revolving tack hopper 54 to prevent a second oscillation of the hopper to feed a second set of tacks to the tack holding and driving units, and to co-operate with the hopper and its operating mechanism in the manner described in my prior Patent No. 1,129,882 of March 2, 1915. It need only be stated here that a wedge member carried by the hopper operates automatically to retract the block 311 at the proper time during the repeated wiping cycle to permit tack driving movement of the head.

Secured to and depending from the lower ends of the plungers 302 are gangs of driver rods 322 (see Figs. 7 and 12) arranged to engage the heads of tacks to drive them into the edge of the upper after it has been wiped over the heel seat. To the base of each of the tack holding and driving units (in the case of the side and corner units, that portion of the unit projecting beyond the inner edge of the base plate) is secured a tack block 324 (Figs. 3, 7 and 12) having its forward end projecting beyond the adjacent inner edge of a wiper plate and having its upper portion provided with a number of tack receiving bores of a diameter to permit the tacks to fall therethrough and also to permit the driving rods 322 freely to be plunged therethrough.

Rearwardly of these bores, the upper face of the tack block is formed with a stop shoulder 326. The under face of the tack block from its front edge rearwardly, is recessed to receive a sectional tack receiving and holding base comprising a grid having front and back walls 328, 330 and one or more connecting ribs 332, depending upon the number of tacks to be received. As shown in Fig. 3, the end unit 234 is designed to receive two tacks, and the corner and side units three tacks. Where two tacks are to be supported and driven, a single rib 332 (Fig. 8) will be employed and where three tacks are to be supported, two spaced parallel ribs will be used (see Fig. 3).

The inner faces of the front walls 328 will be cupped out to form one half of an inverted substantially conical pocket, the apex of which is located at the bottom of the holder. These recesses will conform in number to the number of tacks to be supported and are located at opposite sides of the single rib structure and between and at the outer sides of the ribs of the double rib structure as shown in the side unit 282 at the left hand side in Fig. 3.

The rear walls 330 will act as abutments for the rear ends of coiled springs whose front ends are inserted in sockets in movable blocks 329 co-operating with the front wall and having shoulders formed on their upper faces to engage stop shoulders on the under faces of the blocks 324, (Figs. 7, 8 and 12). These movable blocks will have

their front faces recessed to correspond with the recesses in the front wall 328 to complete the conical tack receiving pocket. Obviously, when the drivers 322 are plunged downwardly, the front walls 328 will move forwardly and the blocks 329 backwardly to the thrust of the driving rods 322 to permit the tacks to be forced from the pockets and into the wiped over edge of the shoe upper. The described parts are retained upon the tack block in assembled relation by means of a closure plate 334 (Figs. 7 and 12) having appropriately located side walls to enclose the movable blocks and their springs and having recessed front edges to permit the tacks to be driven therethrough.

These tacks are supplied to the several units by the tack feeding and delivering mechanism previously referred to through a series of flexible wire tubes 336 extending from said tack feeding and delivering mechanism to the various units. Accordingly, the offset portions of these units are provided with two or three bores 301, as the case may be, extending vertically therethrough and counterbored at their upper ends to provide a diameter sufficient to receive the ends of the flexible tubes 336.

Below the bores 301 bored conductor plates 338 are mounted, their upper ends being pivoted to the offsets with their bores in the line of the corresponding tack bores in the offsets. The lower ends of these plates are normally positioned over and in alinement with the bores in the forward ends of the tack blocks 324 and each against the stop shoulder 326 by means of a coiled spring interposed between the offset and the upper end of the swinging conductor plate. These conductor plates are, obviously, each provided with two or more bores forming tack channels extending longitudinally of the plate and registering at their upper and lower ends with the bores 301 and the bores in the front ends of the tack blocks 324.

The conductor plates, at points in substantial alinement with the lower ends of the plungers 302 in their fully raised positions, are provided with lateral offsets 340 and the lower ends of the plungers are beveled so that when they are thrust downwardly, their lower beveled ends will engage the offsets 340 and will swing the lower ends of the conductor plates away from the tack bores in the tack blocks, permitting the driver rods 322 to be thrust downwardly through the tack blocks to engage the supported tacks and drive them from the conical pockets in the sectional base into the wiped over edge of the upper positioned below it.

The hold-down 200, best seen in Fig. 11, has its base channeled out to provide spaced

contact or bearing faces 342, preferably three in number and triangulated to provide a contact ensuring a firm uniform bearing against the sole.

5 The machine is adapted to last the upper over the heel seat of turn shoes as well as McKay and welt shoes. In the manufacture of turn shoes, this operation occurs during the second lasting operation, the upper having been lasted to the sole from the shank to the toe during the first lasting operation. A shank piece 8 is applied to the last, and the upper at the heel end of the shoe is lasted and tacked to this shank piece by the second lasting operation, the term "insole" 15 being frequently used herein as inclusive of such a shank piece. In order to effect this result the heel end of the sole must be held away from the lasting devices. In my machine, I have provided a hold back blade 20 344 adjustably secured to and depending from the head 208 to engage and hold back the heel portion of the sole in the manner suggested in Fig. 9 of the drawings. It 25 will be evident that as the jack is swung rearwardly to carry the shoe into the heel band the member 344 will act to turn back the heel end of the sole which may be initially turned up by the operator.

30 It will be noted that the lasting head overhangs, and is laterally offset from, the base carrying the work support and is in determinate angular relation to the base; and that it supports lasting instrumentalities, the operation of which transmits strain to the lasting head and to the base through 35 the work support, which strain tends to spring said head and base out of this determinate angular relation. Means are employed for rigidly connecting the base and overhanging head and strengthening them against relative divergence through strain. As shown in Fig. 1, a brace or tie rod rigidly 40 connects the base and the overhanging head.

45 The entire normal cycle of operations takes place in continuous sequence during one revolution of the driven shaft 24, one treadling only being necessary to operate the machine through a complete cycle, the shaft 24 being stopped automatically at the 50 end of a single revolution.

The operation of the described mechanism in lasting and tacking the heel seat is as follows: The parts in the position of rest, 55 are as shown in Figs. 1 and 2 with the rolls engaging the cams of cam wheel 116 as shown in the plot of the cam paths in Fig. 10. In these positions, the hold-down 200 is in its highest position; the wipers and tack holding and driving units are drawn 60 back, and the clamping band is in its fully opened position. The operator mounts the last, with its attached upper and insole on the last pin of the jack or standard 148 and, if necessary, adjust the toe rest 158,

properly to elevate the toe end of the last. The standard is then swung backwardly as far as it may be conveniently by hand and the treadle 202 is depressed to bring the insole against the hold-down 200 as illustrated in Fig. 9. The elevation of the contact face of the hold-down is such that the upper face of the insole will be in a plane above the plane of the lower faces of the wiper plates. If a turn shoe is to have its heel seat lasted the heel portion of the sole is lifted to engage with and be turned and held back by the blade 344 as indicated in Fig. 9. If necessary because of the shape of the heel end of the shoe, the heel band may be adjusted through the hand lever 90 (Fig. 1) and pinion 88, which in co-operation with the stop 244 will determine the distance of the rear tacks from the edge of the heel seat, and the wipers and side tack holding and driving units may be adjusted through the hand levers 270 as previously described. The stop nut on the rod 222 may also be adjusted; if necessary, to change the amount of lowering and lifting movement of the hold-down and to vary its initial position. The last and upper are now positioned to be operated upon by the machine.

Accordingly, the treadle 52 is depressed, throwing in the clutch and starting the revolution of the cam shaft 24.

At the beginning of the revolution of shaft 24 (as will be seen most clearly from the cam plots in Fig. 10) the cam wheel 116 will first bring the rise in the cam surface 172 against the roll 171 of lever 170 to start the preliminary backward power movement of the standard and last previously described to bring the rear end face of the shoe substantially against the band before the band begins to close. After the completion of this movement, the cam surface 172 holds the lever 170 and its operating parts in the same position until the end of the cycle when the low part of the cam surface causes the lever and its ratchet-operating arm 166 to return to initial position under the influence of a suitable spring.

At a point during this movement of the rise in the cam surface 172 against roll 171, the first rise in the cam surface 118 will operate against roll 121 to swing the bell crank lever 120 in a direction to move the racked plate 130 rearwardly, closing, through the previously described connections, the heel band to clamp and conform the upper tightly about the heel end of the last and substantially coincidently, through bell crank lever 180 and its described operating connections swinging backwardly the jack standard and holding the last and shoe upper locked back against the heel clamping band, with the extremity of the shoe upper hard pressed against the clamping band, the heel clamping and jack

positioning movement terminating subsequently to the end of the preliminary yieldingly effected backward movement of the jack and before the first or breaking down movement of the wiper plates 254. Since the hold-down is being moved downwardly, in a manner to be described, to upwipe the upper cam operated movement of rod 190 to lift the jack standard is lost motion taken up by compression of the spring 191.

As the cam surface 118 operates through roll 121 and its bell crank lever to clamp the end of the shoe about the last, a rise in cam surface 174 operates against roll 221 and lever 220 to move the hold-down 200 downwardly, forcing, in turn, the heel end of the shoe and last downward relatively to the heel gripping band 60 which presses against the moving shoe and acts to upwipe the shoe upper over the sides of the last closely to conform the upper to the sides of the last in a manner similar to the upwiping action of the toe wiper plates on "bed" lasting machines when the toe head with the wipers moves upwardly relatively to the toe end of the shoe. This downward movement of the last and shoe is effected without injury to the jack lifting connections since the spring 191 is compressed and takes the strain off these parts. Very substantial upwiping pressure is secured since the jack and shoe are locked back against the band under relatively heavy pressure.

This downward movement of the shoe and last is figured to end with the bottom of the heel end of the shoe position slightly below the plane of the bottom faces of the heel wiper plates 254 so that the shoe is positioned for the first or "breaking down" movement of the wipers, which follows.

The first inward and forward movement or "breaking down wiper" of the wiper plates occurs at the end of the clamping and upwiping operations referred to, when cam wheel 116 brings the first outward bend in the peripheral cam groove against the roll 226 of the sliding wiper actuating block 224, moving the block forwardly to move the wipers with their co-operating tack holding and driving units inwardly and forwardly as previously described, and reversing the movement to retract the wipers and tack holding and driving units as the continued rotation of the cam wheel 116 brings the adjacent reverse bend in the groove against roll 226, the engagement of the terminal of this reverse bend with roll 226 withdrawing the wipers to their initial position of inactivity. This first wiping movement "breaks down" the upstanding marginal portions of the upper over the heel seat but does not iron them out flat, since the last is not as yet moved up sufficiently to bring the heel seat substantially in the plane of the lower faces of the wipers.

Accordingly, as the roll 226 reaches the terminal of the reverse bend in the cam groove 228 which withdraws fully the wipers, the jack and last, through bell crank lever 120 and its described connections operated upon by a second rise on the cam 118, are further pulled backwardly and upwardly, the spring 191 being now compressed to a point of substantial rigidity as the jack is lifted to position the face of the shoe insole substantially in the plane of the lower faces of the wiper plates, the clamping band rising upwardly with the shoe and last. Substantially coincidently, the operation of the racked slide 130 and its connections more tightly clamps the heel band about the shoe further compressing and conforming the upper to the last.

Coincidentally, with the engagement of the roll 121 by the second rise on cam surface 118 further to lift the jack and last, the hold-down controlling roll 221 encounters a drop in the cam surface 174 permitting the rack bar 216 to lift the hold-down coincidently with and proportionately to the second lifting movement of the jack and last. In the event of slight variance between the amount of lifting movements of the hold-down and jack the spring 191 will prevent any straining or breaking of parts. These described heel band clamping, jack swinging and lifting, and hold-down lifting movements occur in the order stated, as the roll 226 reaches the described position at the end of the first "wipe" and is just entering the forwardly inclined portion of a second bend in the cam groove 228 to give a second wiping reciprocation to the sliding block 224.

As the cam wheel 116 continues to rotate the roll 226 and sliding block 224 will be similarly reciprocated a second time for a second "wipe" over the now "broken down" marginal edges of the upper but with the last and shoe now raised to bring the top face of the insole substantially in the plane of the bottom faces of the wipers so that the marginal portions will be "ironed down" flat over the edges of the insole with the upper tightly conformed to the side faces of the last.

A third bend in the cam groove 228 operates against the roll 226 to effect a final though only partial inward and forward wiping movement of the plates, the plates resting in this position for a short period to permit the lasting tacks to be driven while the wiped over edges are held down by the plates with the previously compacted, and iron inner portions of the edges exposed to receive the tacks. The tacks will always be driven at points located definite distances from the inner edges of the wipers since the pin 244 definitely positions the tacks of the end unit, and the corner and side tack holding and driving units position their tacks as

predetermined by the described adjustments for the respective units.

The cam 318 has its high point and drop located to effect maximum compression of the spring 320 and immediately to release it to snap down the hammer head 306 to drive the tacks when the wiper plates have been moved inwardly and forwardly to their third wiping position, and just prior to their retraction from that position at the end of the cycle. The continued rotation of shaft 24 now operates to move the head 306 upwardly sufficiently to position the driving rods 322 substantially above the tack blocks 324 (see Fig. 7) and completely to withdraw the wiper plates, at which point the cam surface 34 automatically operates to throw out the clutch and stop rotation of the driven shaft 24.

The cam groove 30 is formed to effect a complete reciprocation of the frame 31 (which, as described in my prior Patent No. 1,129,882, operates to feed the requisite number of tacks to the tack holding and driving units) at the beginning of the cycle so that the tacks are fed to and seated in the bottom of the driving bores of the respective tack blocks in ample time before the head 306 is operated to drive the tacks. The driving bores and tack-driving rods are inclined at an angle so that when driven, the tacks take up or reduce any slack that may exist between the tacking points and those portions of the edges compacted and held down by the wiper plates.

Toward the end of the revolution of cam wheel 116, just before the wipers are finally retracted and the tack driving rods raised to permit the next set of tacks to be fed, cam surface 118 brings its lowest point in contact with roll 121 of bell crank lever 120, causing the heel band to release the shoe and last and rendering the bell crank lever 180 effective to return the ratchet operating arms 184 and 192 to initial position so that the heel band is loosening and the jack is lowering as the wipers start to move to fully retracted position, the lever 170 also returning with the other parts. As a result, the pressure against the wiper plates is relieved and the wipers are retracted without any "drag" outwardly on the lasted edges. As the pawls 186 and 198 and the pawl which engages the ratchet wheel 164 are returned to their initial positions, they are engaged by suitable throw-out members to disconnect them from their ratchet wheels, as will be understood by reference to Fig. 7. The jack standard may now be swung forwardly by hand and the shoe and last removed. Coincidentally with the release of the jack standard by the operation of cam 118, the cam surface 174 brings its lowest portion against the roll 221 further to cause

the hold-down to return to its initial position.

The machine is now ready to operate upon another last and upper after they have been mounted upon the jack, and the jack moved to position the heel end of the last and upper within the heel band and against the hold-down.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the class described having, in combination, means to support a last, means to hold an upper on the last in close conformity to the sides of the last at one end, wiper mechanism including complementary wiper plates curved to embrace said end of the last and mounted for bodily and relative swinging movement, with intergeared adjusting members arranged for manual operation relatively and independently to swing said plates to conform the contour defined by their edges substantially to that of the end to be lasted, and power operated means constructed and arranged to effect subsequent bodily and relative swinging movement of the wiper plates over the bottom of the last to wipe down the upstanding edges of the upper over the bottom of the last.

2. A machine of the class described having, in combination, means to support a last, means to hold an upper in close conformity to one end of the last, and mechanism operative to wipe down the marginal portions of the upper over the bottom of the last at said end of the last, said mechanism including two pivotally mounted curved wiper plates with gear operated adjusting connections to the outer swinging end of each plate arranged for operation independently to swing said plates to conform the contour defined by their edges substantially to the contour of said end of the last and mechanism arranged subsequently to move said wiper plates inwardly and forwardly and outwardly and backwardly to wipe down and compact the marginal portions of the upper over the bottom of the last.

3. A machine of the class described having, in combination, pivoted wiper plates arranged to operate upon one end of a shoe, a last and shoe support arranged to be moved to position the last and shoe in co-operative relation to the wiper plates, means arranged to engage and hold a shoe upper in close conformity to the sides of the last at one end of the last when the latter is operatively positioned, with manually operable intergeared adjusting members co-operating with the outer swinging ends of the wiper plates determinately and independently to swing and hold said ends of said

wiper plates in initially adjusted position, and mechanism operative to effect subsequent bodily and swinging movement of the wiper plates to wipe down the marginal portions of the upper over the bottom of the last at said end of the last.

4. A machine of the class described, having, in combination, pivoted wiper plates arranged to operate upon one end of a shoe, a last and shoe support arranged to be moved to position the last and shoe in co-operative relation to the wiper plates, means arranged to engage and hold a shoe upper in close conformity to the sides of the last at one end of the last when the latter is operatively positioned, rack and pinion operated adjustment means co-operating with the outer swinging ends of the wiper plates determinately and independently to swing and hold said ends of said wiper plates in initially adjusted position, mechanism operative subsequently to effect bodily and swinging movement of the wiper plates to wipe down the marginal portions of the upper over the bottom of the last at said end of the last, and mechanism operative to tack down said wiped-over marginal portions.

5. A heel seat lasting mechanism having, in combination, pivoted wiper plates arranged to operate upon the heel end of a shoe, a last and shoe support arranged to be moved to position a last and shoe in co-operative relation to the wiper plates, means arranged to engage and hold the shoe upper in close conformity to the heel end of the last when the last and shoe are operatively positioned relatively to the wiper plates, an adjusting member connected to the outer swinging end of each wiper plate, manually operable rack and pinion gearing co-operating with said adjusting members and arranged determinately and independently to swing said outer ends of the wiper plates to an initially adjusted position to adjust the contour defined by their edges to conform substantially to the contour of the heel end of the last, and mechanism operative to effect bodily and swinging movement of the wiper plates to wipe the marginal portions of the upper over the bottom of the last at the heel seat.

6. A machine of the class described having, in combination, end lasting wiper plates for closing over a last bottom, manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last, means to effect bodily and swinging movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened on the bottom of the last, and tacking units co-operating with the wiper plates and having means to maintain them in predetermined

relation to the wiper plates in all positions of adjustment of said plates.

7. A machine of the class described, having, in combination, end lasting wiper plates for closing over a last bottom at one end, manually operable means determinately and independently to adjust the positions of the wiper plates initially to position said plates to act on the marginal portions at the end of a shoe upper mounted on the last, means to effect bodily and swinging movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened, and tacking units co-operating with and having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates, including side tacking units having positive unyielding connections with the free ends of said plates.

8. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to operate said plates to wipe over and compact the upper on the last bottom at said end, tacking units yieldingly held in predetermined position relatively to the end and corners of the wiper element, and side tacking units having positive unyielding connection to the sides of the wiper element at the free ends of said wiper plates.

9. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to operate said plates to wipe over and compact the upper on the last bottom at said end, end and corner tacking units yieldingly held in predetermined position relatively to the end, corners of the wiper element and side tacking units having positive unyielding connection with the sides of the wiper element at the free ends of said wiper plates, and means to adjust the positions of the free ends of the wiper plates and coincidentally and correspondingly to adjust the position of the side tacking units.

10. A heel seat lasting machine having, in combination, a wiper element comprising wiper plates for closing over the heel end of a last bottom, means to operate said plates to wipe over and compact the upper on the last bottom at the heel seat, end and corner tacking units yieldingly held in predetermined position relatively to the heel end and corners of the wiper element, and side tacking units having positive unyielding connection to the sides of the wiper element at the forward ends of said wiper plates.

11. A heel seat lasting machine having, in combination, a wiper element comprising wiper plates for closing over the heel end of a last bottom, means to operate said plates to wipe over and compact the upper on the

last bottom at the heel seat, tacking units yieldingly held in predetermined position relatively to the heel end and corners of the wiper element, side tacking units having positive unyielding connection to the sides of the wiper element at the forward ends of said wiper plates, and means coincidently to adjust the positions of the side tacking units and the forward ends of the wiper plates.

12. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to effect bodily and swinging movement of the plates of said element to wipe over the upper upon the last bottom at said end of the last, tacking units co-operating with the end, corners and sides of said wiper element and positioned in predetermined relation to said wiper element for tacking, with means to vary the effective tacking positions of said corner and side units relatively to the wiper element.

13. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to effect bodily and swinging movement of the plates of said element to wipe over the upper upon the last bottom at said end of the last, tacking units co-operating with the end, corners and sides of said wiper element and positioned in predetermined relation to said wiper element for tacking, with means independently to vary the effective tacking positions of said corner and side tacking units relatively to the wiper element.

14. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to effect bodily and swinging movement of the plates of said element to wipe over the upper upon the last bottom at said end of the last, tacking units co-operating with the end, corners and sides of said wiper element and positioned in predetermined relation to said wiper element for tacking, with means located on the outside of the machine and accessible to the operator for varying the effective tacking positions of said corner and side tacking units relatively to the wiper element.

15. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to effect bodily and swinging movement of the plates of said element to wipe down the upper over the last bottom at said end of the last, tacking units co-operating with the end, corners and sides of said wiper element and positioned in predetermined relation to

said wiper element for tacking, with means located on the outside of the machine and accessible to the operator independently to vary the effective tacking positions of said corner and side tacking units relatively to the wiper element.

16. A machine of the class described having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at one end, means to effect bodily and swinging movement of the plates of said element to wipe over the upper upon the last bottom at said end of the last, tacking units co-operating with the end, corners, and sides of said wiper element having tack holding means and driving instrumentalities to drive tacks in the wiped over upper, with means to position said units with their tack holding means located predetermined distances inwardly from the inner edges of the wiper plates, and means determinately to vary the positions of the tack holding means of said corner and side units relatively to the wiper plates.

17. A heel seat lasting machine having, in combination, a wiper element comprising end lasting wiper plates for closing over a last bottom at the heel end thereof, means to effect bodily and swinging movements of said wiper plates inwardly and outwardly over the last bottom to wipe the upper over the last bottom at the heel seat, tacking units co-operating with the end, corners, and sides of said wiper element having tack holding means and driving instrumentalities to drive tacks in the wiped over upper, with means to position said units with their tack holding means located predetermined distances inwardly from the inner edges of the wiper plates, and means determinately to vary the positions of the tack holding means of said corner and side units relatively to the wiper plates.

18. A machine of the class described having, in combination, means to support a last, means to hold an upper on the last in close conformity to the last at one end, and mechanism operative to wipe the marginal portions of the upper over the bottom of the last at said end comprising pivoted end wiper plates having extensions, a supporting member for the wiper plates bodily movable with said plates and having means arranged to receive and guide said wiper plate extensions for swinging movement, and operating connections between said member and said pivoted plates effective to swing said plates upon movement of said member bodily to move said plates.

19. A machine of the class described having, in combination, means to support a last, means to hold an upper on the last in close conformity to the last at one end, and mechanism operative to wipe the marginal portions of the upper over the bottom of the last

at said end comprising pivoted end wiper plates having extensions at their pivoted ends, an operating member arranged to effect bodily and swinging movement of said plates having a support for the extensions of said plates, arcuate tongue and groove guiding and supporting connections between said plate extensions and said support, and operating connections between said member and said plates effective to swing said plates upon movement of said operating member bodily to move said plates.

20. A heel seat lasting machine having, in combination, means to support a last, means to hold an upper on the last in close conformity to the last at the heel end of the last, and mechanism operative to wipe the marginal portions of the upper over the bottom of the last at the heel seat comprising curved wiper plates pivotally interconnected at the inner edges of their rear ends and having rearward extensions from said pivoted ends, an operating member mounted for sliding movement to effect bodily movement of said wiper plates and having a wiper support, with arcuate tongue and groove connections between the plate extensions and said support, and positive connections between the sliding operating member and the free ends of said wiper plates to swing said plates inwardly and outwardly upon forward and backward movement of the operating member.

21. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member connected to the closed or rear end of said clamping member, supporting means for the edges of said clamping member adjacent to its open end, pressure members arranged to engage and press inwardly the sides of said U-shaped clamping member, manually operable means to move said adjusting member bodily to slide said clamping member relatively to said pressure members, means to operate said pressure members, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.

22. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member connected to the rear or closed end of the U-shaped clamping member, pressure members supported at opposite sides of the clamping member and arranged to engage and press inwardly the sides of the U-shaped clamping member, supports for the opposite side edges

of the clamping member mounted to move with said pressure members, manual means for operating said adjusting member to move said clamping member relatively to said pressure members and said supports, means to operate said pressure members, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.

23. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member connected to the lower edge of said clamping member at its rear closed end, means to support the lower edges of said clamping member at opposite sides, pressure members arranged to engage the opposite sides of the U-shaped clamping member at points above its lower edges and to press said sides inwardly to force the end of the upper in close conformity to the last, manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members, means to operate said pressure members to clamp the shoe upper, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.

24. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member having connection with the clamping member adjacent to its lower edge and having a fixed back stop to engage the clamping member intermediate of its upper and lower edges, means to support opposite sides of the clamping member at its lower edges, pressure members arranged to engage and press inwardly the sides of the U-shaped clamping member to conform the upper to the last, manually operable means to move said adjusting member to slide the clamping member relatively to said pressure members and said supports, means to operate said pressure members, and end wiping mechanism to wipe the edges of the upper over the bottom of the last.

25. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member having connection with the clamping member adjacent to its lower edge and having a fixed back stop to engage the clamping member intermediate of its upper and lower edges

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and having means yieldingly to engage the rear end of the clamping member adjacent to its upper edge and at opposite sides of its longitudinal median line, pressure members arranged to engage and press the sides of the clamping member to conform the upper to the last, manually operable means to move said adjusting member bodily, and end wiping mechanism to wipe the edges of the upper over the bottom of the last.

26. A lasting mechanism of the class described having, in combination, an integral, substantially U-shaped band of flexible material to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping band, a movable adjusting member having connection with the lower edge of the clamping band at its rear closed end and having a rigid back stop to engage the clamping band intermediate of its upper and lower edges at said rear end, supports for the lower edges of said band at its opposite sides, pressure members arranged to engage and press inwardly the sides of the band, manually operable means to move said adjusting member to slide the clamping band relatively to said supports and pressure members, means to operate said pressure members to clamp and conform the shoe upper to the end of the last, and end wiping mechanism to wipe the edges of the upper over the bottom of the last.

27. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping band to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said band, a movable adjusting member connected to the rear closed end of the band, means to support the edges of the band at opposite sides and forwardly of its rear closed end, manually operable means determinately to move said adjusting member to move the clamping band, abutments positioned to engage the opposite sides of the band and effective, upon such bodily movement, to control the band and determine its contour, means to press the sides of the band inwardly to cause the band to clamp and conform the upper to the end of the last, and end wiping mechanism to wipe the edges of the upper over the bottom of the last.

28. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping band to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping band, means to support the edges of the clamping band at opposite sides thereof and forwardly of its closed rear end, a movable adjusting member connected to said band at its rear end, manually operable means de-

terminately to move said adjusting member to move the clamping band relatively to said supporting means, pressure members having contact faces positioned to engage the opposite sides of the band and effective upon such bodily movement of the band to control the band and determine its contour, means to operate said pressure members to press the band inwardly to clamp and conform the shoe upper to the end of the last, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.

29. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a support for the rear closed end of the clamping member, means to exert pressure against the sides of the U-shaped clamping member to clamp and conform the upper to the end of the last, means positively to lock the pressure exerting means against accidental unclamping movement, and wipers to operate upon the edges of the clamped upper to wipe said edges over the bottom of the last.

30. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a support for the rear closed end of the clamping member, means to exert pressure against the sides of the U-shaped clamping member to clamp and conform the upper to the end of the last, means constructed and arranged to lock the pressure exerting means against accidental retraction from upper clamping position and automatically to release the locking means upon predetermined unclamping movement of said pressure exerting means, and wiper mechanism to operate upon the edges of the clamped upper to wipe said edges over the bottom of the last.

31. A lasting machine of the class described having, in combination, a substantially U-shaped flexible clamping member arranged to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, contact plates arranged to engage opposite side faces of the clamping member, springs cooperating with said plates, pressure means operable to tension said springs against said plates to move the clamping member to clamp and conform the shoe upper to one end of the last, with means operative automatically to lock said plates against pressure releasing movement, and end wiping mechanism operable to wipe

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the edges of the clamped upper over the bottom of the last.

32. A lasting machine of the class described having, in combination, a substantially U-shaped flexible clamping member arranged to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, contact plates arranged to engage opposite side faces of the clamping member, springs cooperating with said plates, pressure means operable to tension said springs against said plates to move the clamping member to clamp and conform the shoe upper to one end of the last, with means operative automatically to lock said plates against pressure releasing movement and operative automatically to release the plates upon operation of said pressure means to release the clamping member, and end wiping mechanism operable to wipe the edges of the clamped upper over the bottom of the last.

33. A lasting machine of the class described having, in combination, a substantially U-shaped flexible clamping band arranged to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping band, pressure members at opposite sides of said band having contact plates thereon to engage opposite side faces of the band to clamp and conform the upper to the last and mounted automatically to conform to the vertical contour of the sides of a last, means to actuate said pressure members to clamp and conform the shoe upper to the last, means operative automatically to lock said pressure members against pressure releasing movement independently of said actuating means, and end wiping mechanism to wipe the edges of the clamped upper over the bottom of the last.

34. A machine of the class described having, in combination, end wiper plates constructed and arranged to wipe the sides, corners and end of the marginal edge of one end of a shoe upper over the bottom of a last at one end of the last, means to hold a last and shoe upper in co-operative relation to the wiper plates, means to effect bodily and swinging movement of the wiper plates over the bottom of the last to wipe the upstanding edges of the upper over the bottom of the last, side tacking units determinately positioned relatively to the wiper plates and having positive connection with said wiper plates adjacent to their free ends, and corner and end tacking units yieldingly maintained in determinate relation to the wiper plates and normally moving therewith but arranged to yield under pressure from contact with the upstanding marginal edge of an upper.

35. A machine of the class described hav-

ing, in combination, end wiper plates constructed and arranged to wipe the sides, corners, and end of the marginal portion of one end of a shoe upper over the bottom of a last at one end of the last, means to hold a last and shoe upper in co-operative relation to the wiper plates, means to effect bodily and swinging movement of the wiper plates over the bottom of the last to wipe the upstanding edges of the upper, over the bottom of the last, side tacking units determinately positioned relatively to and extending beyond the inner edges of the wiper plates and having positive connection with said wiper plates adjacent to their free ends, corner and end tacking units yieldingly maintained in determinate relation to the wiper plates to extend beyond the inner edges of the plates and normally moving therewith but arranged to yield under pressure from contact with the upstanding marginal edge of an upper, means to feed tacks to said units, and means to drive said tacks into the wiped over edges of the upper.

36. A machine of the class described having, in combination, clamping means to engage and conform one end of a shoe upper to its last, a support for a last and shoe arranged for movement to co-operate with said clamping means, wipers arranged to operate upon the marginal edges of the upper at said end of the shoe and last, power operated mechanism determinately to move said support relatively to the wipers and clamping means to position the last and shoe to co-operate with said clamping means and wipers and to operate said clamping means to clamp and hold the shoe and last, and mechanism operative in timed relation to said support and clamping means to actuate the wipers to break down the upstanding edges of the upper, said power operated mechanism being subsequently operative further to move said support with its last and shoe relatively to the wipers and rigidly to support and hold the last and shoe, and said wiper mechanism being subsequently operative in timed relation further to actuate the wipers to wipe down and compact the broken down edges of the upper over the bottom of the last.

37. A heel seat lasting mechanism for boots and shoes having, in combination, a last and shoe support, a band arranged to embrace the heel end of a shoe, power operated mechanism determinately to move said support to position the heel end of the last and shoe within said band and to clamp the band about said heel end of the shoe and last, and wiper mechanism operative in timed relation to said support and band to break down the edge of the upper at the band-embraced end of the clamped shoe, said power operated mechanism being subsequently operative in timed relation fur-

ther to move the last and shoe support relatively to the wipers and rigidly to support and hold the last and shoe and said wiper mechanism being subsequently operative in timed relation to wipe and compact the broken down edge of the upper over the heel seat of the shoe.

38. A machine of the class described having, in combination, clamping means to engage and conform one end of a shoe upper to its last, a hold-down arranged for vertical movement and positioned to be engaged with the bottom of the last and shoe, a support for a last and shoe arranged for manually effected vertical and horizontal movement to position the last and shoe against said clamping means and hold-down, wipers arranged to operate upon the marginal edges of the upper at said end of the shoe and last, power operated mechanism to move said support to press an end of the shoe and last against said clamping means and hold-down and to operate said clamping means to clamp and conform the upper to the last, mechanism operable to move said hold-down determinately to depress the last and shoe relatively to said clamping means, said power operated mechanism being subsequently effective in timed relation to said support and clamping means to actuate the wipers to break down the edge of the clamped upper over the bottom of the last, and means operative subsequently in timed relation determinately to raise said hold-down relatively to the last and shoe and to the wipers, said power operated mechanism being operative substantially coincidently to raise said support with its last and shoe relatively to the wipers to engage the bottom of the last and shoe with said hold-down with the bottom of the shoe in-sole substantially in the operating plane of the wipers, and said wiper mechanism being subsequently operative in timed relation further to actuate the wipers to wipe over and compact the broken down edges of the upper over the bottom of the last and shoe.

39. An end lasting mechanism for boots and shoes having, in combination, an end embracing band supported for bodily movement upwardly, a hold-down arranged for vertical movement and positioned to engage over the bottom of a last and shoe, a last and shoe support manually movable to engage the shoe with said hold-down and band, power operated mechanism to move said support to force the shoe and last against said band and hold-down and operative to clamp the band about said end of the shoe and last, mechanism operative to depress said hold-down to force downwardly the support and clamped last and shoe relatively to the clamping band, and wiper mechanism operative in timed relation to said support and band to break down the edge of the

upper over the bottom of the last at the band-embraced end of the depressed and clamped shoe, said hold-down mechanism being subsequently operative in timed relation determinately to raise the hold-down relatively to said wiper mechanism, and said power operated mechanism being operative substantially coincidently to raise the support with the last, shoe and clamping band to engage the bottom of the last and shoe with said hold-down and said wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last.

40. A heel seat lasting machine having, in combination, clamping means to embrace the heel end of a last and shoe, a hold-down mounted for vertical movement and positioned to be engaged by the bottom of the last and shoe, a support for a last and shoe constructed and arranged for manually effected movement to engage the shoe with said clamping means and hold-down, mechanism to actuate the clamping means to engage the embraced end of the shoe and last, means operative automatically to effect relative upwiping movement between the last and shoe and said clamping means, end wiper mechanism operative in timed relation to said upwiping movement to break down the edge of the upper at the clamped end of the positioned shoe, and means automatically operated in timed relation and subsequently effective determinately to raise the hold-down relatively to said wiper mechanism and correspondingly to raise said support with its last and shoe to engage the bottom of the last and shoe with said hold-down, said wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the heel seat of the shoe.

41. A machine of the class described having, in combination, clamping means to embrace one end of a last and shoe, end wipers positioned to operate on the edges of the upper at said end of the shoe, a hold-down mounted for vertical movement and positioned to engage the bottom of the last and shoe, a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down, power operated mechanism having a resilient lifting connection with said support and effective to move said support forcibly to press the last and shoe against said clamping means and hold-down and to actuate the clamping means, mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers, and mechanism operative to actuate the wipers to break down

the edge of the upper over the bottom of the positioned last and shoe, the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidentally correspondingly to raise said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers, and the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last.

42. A machine of the class described having, in combination, clamping means to embrace one end of a last and shoe, end wipers positioned to operate on the edges of the upper at said end of the shoe, a hold-down mounted for vertical movement and positioned to engage the bottom of the last and shoe, a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down, power operated mechanism effective to move said support forcibly to press the last and shoe against said clamping means and hold-down and to actuate the clamping means, mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers, mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe, the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidentally correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers, and the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last and shoe, and manually adjustable means for determinately varying the amount of vertical movement of the hold-down.

43. A machine for lasting the heel seats of boots and shoes comprising, in combination, wiper plates arranged to wipe down and compact the upstanding edges of a shoe upper over the heel seat, means for supporting and holding a last and shoe upper in position to co-operate with said wiper plates, and a depending hold-back member terminating at a point above the plane of the bottom of the last and shoe in operative lasting position and positioned forwardly of the rear end of the heel seat to engage

and hold the heel portion of the sole of a turn shoe back from the heel seat.

44. A machine for lasting the heel seats of shoes comprising in combination, wiper plates arranged to wipe down and compact the upstanding edges of a shoe upper over the heel seat, means for supporting and holding a last and shoe upper in position to co-operate with said wiper plates and a plate supported above the plane of the bottom of the shoe and last in operative lasting position and having its end positioned forwardly of the rear end of the heel seat to engage and hold back the heel end of the sole of a turn shoe.

45. A machine of the class described having, in combination, means for supporting a last and shoe upper, end embracing wipers, and automatically operated mechanism constructed and arranged to work the entire end portion of the upper into lasted position under pressure serving to compact the overworked upper upon the last bottom and thereafter to release the pressure and subsequently to withdraw the wipers, all in a normal uninterrupted series of operations initiated by a single actuation of a power controlling means.

46. A machine of the class described having, in combination, means for supporting a last and shoe upper, end embracing wipers, tacking mechanism, and automatically operated mechanism constructed and arranged to work the entire end portion of the upper into lasted position under pressure serving to compact the overworked upper upon the last bottom, thereafter partially to retract the wipers and to tack down exposed portions of the overworked upper, subsequently to release the pressure and thereafter completely to withdraw the wipers, all in the normal uninterrupted series of operations initiated by a single actuation of a power controlling means, said mechanism including manually operable means to prevent the operation of the tacking mechanism during said cycle without interference with the continuity of the cycle.

47. A machine of the class described having, in combination, clamping means to embrace one end of a shoe, wipers to operate upon the edge of the upper at said end of the shoe, a support for a last and shoe with means to move said support to position one end of the last and shoe for co-operation with the clamping means and in determinate relation to the wipers, operating means to cause the clamping means to embrace said end of the shoe to conform it to the sides of the last, means to effect determinate relative movement between said shoe support and said clamping means to upwipe and conform the sides of the shoe upper to the sides of the last and to position the shoe for co-operation with the wipers, and means

to operate the wipers to wipe the edges of the shoe upper over the bottom of the last.

48. A machine of the class described having, in combination, clamping means to embrace one end of a shoe, wipers to operate upon the edge of the upper at said end of the shoe, a support for a last and shoe with means to move said support to position one end of the last and shoe for co-operation with the clamping means and in determinate relation to the wipers, operating means to cause the clamping means to embrace said end of the shoe to conform it to the sides of the last, mechanism operative determinately to move said support with its last and shoe relatively to said clamping means to upwipe and conform the sides of the shoe upper to the sides of the last and to position the shoe for co-operation with the wipers, and means to operate the wipers to wipe the edges of the shoe upper over the bottom of the last.

49. A machine of the class described having, in combination, clamping means to embrace one end of a shoe, wipers to operate upon the edges of the shoe upper at the clamped end of the shoe, a support for a last and shoe with means to raise said support to position the last and shoe for cooperation with the clamping means and in determinate relation to the wipers, means to operate the clamping means to embrace the end of the positioned shoe to conform the sides of the upper to the sides of the last, mechanism operative determinately to depress said support with its last and shoe relatively to the clamping means to upwipe and conform the upper over the sides of the last and to position the shoe in a plane to co-operate with the wipers, and means to operate the wipers to wipe the edges of the upper over the bottom of the last.

50. A machine of the class described having, in combination, clamping means to embrace one end of a shoe, wipers to operate upon the edges of the shoe upper at the clamped end of the shoe, a support for a last and shoe with means to raise said support to position the last and shoe for co-operation with the clamping means and in determinate relation to the wipers, means to operate the clamping means to embrace the end of the positioned shoe to conform the sides of the upper to the sides of the last, mechanism operative determinately to depress said support with its last and shoe relatively to the clamping means to upwipe and conform the upper over the sides of the last and to position the shoe with its bottom in a plane determinately below the plane of the wipers, means to operate the wipers to break down the upstanding edge of the upper over the bottom of the last, means to raise the shoe support to position the shoe with its bottom substantially in the operating plane of the

wipers, and means to operate the wipers to wipe down and compact the previously broken down edge of the upper over the bottom of the last.

51. In an end lasting mechanism, an end embracing band, wipers, a last and shoe support, means to move the support to position one end of the shoe for engagement by the band with the shoe bottom in a plane out of the plane of effective action of the wipers, means to operate the band to clamp the shoe upper to the last, and means relatively to move the shoe and clamping band to upwipe the upper over the last and to position the shoe with the edges of its upper in the plane of effective action of the wipers.

52. In an end lasting mechanism, an end embracing band, wipers, a last and shoe support, means to raise the support to position one end of the shoe for engagement by said band with the shoe bottom in a plane above the plane of effective action of the wipers, means to operate the band to clamp the shoe upper to the last, and means determinately to depress the shoe relatively to the band to upwipe the shoe upper over the sides of the last and to position the shoe with the upstanding edge of its upper in the plane of effective wiping action of said wipers.

53. A heel seat lasting machine having, in combination, clamping means to embrace the heel end of a shoe upper, wipers to operate upon the edge of the upper at the heel end of the shoe, a support for a last and shoe, means to move said support to position the heel end of the last and shoe for co-operation with the clamping means and in determinate relation to the wipers, operating means effective to cause the clamping means to embrace the heel end of the positioned shoe to conform the shoe upper to the sides of the last, means to effect determinate relative movement between said shoe support and clamping means to upwipe the upper over the last and to position the shoe for co-operation with the wipers, and means to operate the wipers to wipe the edges of the upper over the heel seat of the shoe.

54. A heel seat lasting machine having, in combination, clamping means to embrace the heel end of a shoe, wipers to operate upon the upstanding edges of the upper at the clamped end of the shoe, means to support a last and shoe in inverted position, means to raise said support to position the last and shoe for co-operation with the clamping means with the bottom of the shoe above the operating plane of the wipers, means to operate the clamping means to embrace the heel end of the positioned shoe, mechanism operative determinately to depress said last and shoe support relatively to the clamping means to upwipe the upper

over the sides of the last and to position the shoe with the upstanding edges of its upper in a plane to co-operate with the wipers, and means to operate said wipers to wipe down the upstanding edges of the upper over the heel seat of the shoe.

55. A heel seat lasting machine having, in combination, clamping means to embrace the heel end of a shoe, wipers to operate upon the upstanding edges of the upper at the clamped end of the shoe, means to support a last and shoe in inverted position, means to raise said support to position the last and shoe for co-operation with the clamping means with the bottom of the shoe above the operating plane of the wipers, means to operate the clamping means to embrace the heel end of the positioned shoe, mechanism operative determinately to depress said last and shoe support relatively to the clamping means to upwipe the upper over the sides of the last and to position the shoe with its bottom in a plane determinately below the operating plane of the wipers with the upper edges in said operating plane, and means subsequently to operate said wipers in timed relation to the shoe support to break down the upstanding edges of the upper over the heel seat, said support operating mechanism being subsequently effective in timed relation determinately to raise said support and shoe to position the shoe bottom in the operating plane of the wipers, and said wiper operating means being subsequently effective in timed relation to operate the wipers to wipe down and compact over the heel seat the broken down edges of the upper.

56. A machine of the class described having, in combination, means to support a last, means to hold an upper on the last against the sides of the last at one end, wiper mechanism including end embracing wipers mounted for relative swinging movement, and power operating means and connections to said wipers for effecting swinging movement of the wipers to wipe down the upper materials over the bottom of the last, said power operated connections including means detachably and adjustably connecting the wiper plates and the power operating means and manually operable to swing said wipers independently of said power means to conform the contour defined by the edges of said wipers approximately to the contour of the end of the last to be operated upon.

57. A machine of the class described having, in combination, means to support a last, means to hold an upper on the last against the sides of the last at one end, wiper mechanism including end embracing wipers mounted for relative swinging movement, and power operated connections to said wipers for effecting swinging movement of the wipers to wipe down the upper materials

over the bottom of the last, said power operated connections including power operated members movable bodily toward and from the opposite sides of a supported last and having adjustable connection with the outer swinging ends of the wipers, said members being manually operable to swing said wipers independently of the power means to adjust said wipers previous to power operation to conform the contour defined by the wiper edges approximately to the contour of the end of the last to be operated upon.

58. A machine of the class described having, in combination, means to support a last, means to hold an upper on the last against the sides of the last at one end, wiper mechanism including end embracing wipers mounted for bodily and swinging movement toward and over the bottom of the last, power operated mechanism to effect bodily and relative swinging movement of the wipers over the bottom of the last to wipe down the upper materials, and members adjustably connecting the outer swinging ends of the wipers to said power mechanism, said members being manually movable laterally of the last to swing and adjust the wipers relatively to said mechanism and toward and from the opposite sides of the last prior to power operations of the wipers to conform the contour defined by the edges of said wipers approximately to the contour of the end of the last to be operated upon.

59. In a machine of the class described, in combination, end embracing wipers mounted for swinging movement to close over the bottom of a last, means to support a last and shoe with one end in co-operative relation to said wipers, and power operated connections to said wipers for effecting swinging movement of the wipers including connections to the outer swinging ends of said wipers arranged for manually effected adjustment laterally of the shoe to swing said wipers to an initially adjusted position independently of and previous to power operation with the contour defined by their edges conforming substantially to the contour of the end of the last and shoe to be operated upon.

60. In a machine of the class described, the combination of a last support, means arranged to embrace a boot or shoe upper on a supported last at one end of the last to clamp and conform the upper materials to said end of the last, means to operate said end embracing means, and means relatively to move the last support and end embracing means into contact at the extreme end of the last under relatively heavy upper conforming pressure and unyieldingly to hold said parts in contact under pressure during upper-conforming operation of the end embracing means.

61. In a machine of the class described,

the combination of a last support, means arranged to embrace a boot or shoe upper on a supported last at one end of the last to clamp and conform the upper materials to said end of the last, mechanism to close said end embracing means to clamp and conform the upper materials, and means automatically operative in timed relation to the closing of the end embracing means to move the last and upper on the last support into said embracing means with the upper at the extreme end of the last exerting substantial pressure against said end embracing means and to lock the support positively in such position to maintain said pressure during the upper-conforming operation of the end embracing means.

62. In a machine of the class described, the combination of a last support, means arranged to embrace a boot or shoe upper on a supported last at one end of the last to clamp and conform the upper materials to said end of the last, mechanism to operate said end embracing means to clamp and conform the upper materials, and means automatically operative in timed relation to the closing of the end embracing means relatively to move the last support and end embracing means to hold the upper at the extreme end of the last with relatively heavy upper-conforming pressure against said embracing means and to lock said parts positively in such conforming position to maintain said pressure during the upper conforming operation of the end embracing means and subsequently and automatically to release said parts from such locked conforming position.

63. In a machine of the class described, the combination of means for conforming a shoe upper to the side of its last at one end of the last, a last support mounted for swinging movement, and power means to swing said support in a direction to move the last with its upper lengthwise into lasting position with the upper at the extreme end of the last hard pressed against said conforming means, and for unyieldingly holding said swinging support with the shoe pressed back in said position.

64. In a machine of the class described, the combination of means for conforming a shoe upper to the side of its last at one end of the last, a pivoted last support with power means to swing said support to move the last and shoe upper lengthwise into lasting position with the extremity of the upper hard pressed against said conforming means and to lock said swinging support in such position, power operated means for further and relatively moving the last and conforming means to force the shoe upper harder against said conforming means.

65. A machine of the class described having, in combination, clamping means to em-

brace the end of a shoe upper, a last and shoe support mounted for movement toward and from said clamping means, power means to move said support to force the extremity of the shoe upper hard against said clamping means and to lock the shoe in such position, means for operating the clamping means tightly to embrace the end of the shoe, and mechanism for relatively moving the support and shoe and said clamping means in a direction transverse to the plane of the shoe bottom with the shoe pressed hard against said clamping means to cause said clamping means to upwipe the shoe upper.

66. A machine of the class described having, in combination, clamping means to embrace the end of a shoe upper, a last and shoe support mounted for lateral movement toward and from said clamping means and for bodily movement in a direction transverse to the plane of the shoe bottom, power means for laterally moving said support to force the extremity of the shoe upper hard against said clamping means and for locking the support and shoe in such position, mechanism for operating the clamping means tightly to embrace the end of the shoe upper, and mechanism for moving the support with its last and shoe upper in a direction transverse to the plane of the shoe bottom with the extremity of the shoe held pressed against said clamping means to cause said clamping means to upwipe the embraced end of the shoe upper.

67. A machine of the class described having, in combination, clamping means to embrace the heel end of a shoe upper, a support for a last and shoe mounted for lateral movement toward and from said clamping means and for movement relatively to said clamping means in a direction transverse to the plane of the shoe bottom, mechanism for moving said support laterally to press the heel end of a shoe upper on a supported last hard against said clamping means and including means for locking said support in such position, mechanism for operating the clamping means tightly to embrace the heel end of the shoe upper to conform it to its last, and means for moving the support relatively to said clamping means in said transverse direction, with the heel end of the shoe held hard against said clamping means to cause said clamping means to upwipe the embraced heel end of the shoe upper.

68. In a machine of the class described, in combination, a support for a last and shoe, power operated means to engage and clamp the upper to the sides of the heel end of its last, means for relatively moving the shoe support and said clamping means substantially perpendicularly to the plane of the shoe bottom to cause said clamping means to wipe the shoe stock toward the bottom face of the last, and additional means for

laying the margin of the upper inwardly over the bottom of the last.

69. In a machine of the class described, in combination, a support for a last and shoe, means to engage and clamp the upper at one end of the shoe against its last by relative movement of the shoe and said clamping means lengthwise of the shoe, means for moving the last and shoe support relatively to said clamping means and substantially perpendicularly to the plane of the shoe bottom in time relation to the upper clamping operation to cause said clamping means to wipe the shoe stock toward the bottom face of the last, and additional means for laying the margin of the upper inwardly over the bottom of the last.

70. In a machine of the class described, in combination, a support for a last and shoe, means to engage and clamp the upper round one end of its last, means for flanging the marginal portion of the stock, and means for relatively moving in time relation the shoe support and said clamping means lengthwise of the shoe to clamp the upper and substantially perpendicularly to the plane of the shoe bottom to cause said clamping means to wipe the shoe stock toward the bottom face of the last to prepare the marginal portion of the stock for the flange-forming operation.

71. In a machine of the class described, in combination, a support for a last and shoe, a band arranged to embrace one end of the shoe upper, power operated means for moving said band from an open to a closed position to press the upper against the last, means for flanging the marginal portion of the upper and laying it over the edge of the last bottom, and power operated means for moving the shoe support relatively to the closed band and in a direction to cause said band to wipe the shoe stock toward the bottom of the shoe to prepare the marginal portion of the stock for the flange-forming operation.

72. In an end lasting machine, power operated mechanism including means operated in timed relation to embrace and clamp the end portion of a shoe and relatively to move the last and the clamped shoe stock to draw the shoe stock toward the bottom face of the last, and means then to wipe the margin of the shoe stock over the bottom face of the last.

73. In a heel seat lasting machine, power operated mechanism including means operated in timed relation to embrace and clamp the heel end of a shoe upper against the sides of its last, relatively to move the last and the clamped shoe stock to draw the shoe stock toward the heel seat face of the last, and then to wipe the margin of the shoe stock inwardly over the heel seat face of the last.

74. In a heel seat lasting machine, the combination with means to clamp the shoe stock about the sides of the rear portion of a last and means to wipe the margin of the shoe stock in over the heel seat face of the last, of means for causing the clamping means automatically to tighten the clamped shoe stock about the sides in a direction toward the heel seat face of the last preparatory to the margin wiping action.

75. In a heel seat lasting machine, the combination with flange forming wipers, of mechanism organized to prepare the shoe stock automatically for the action of the wipers by clamping it to the contour of the sides of the heel part of the last and tightening it over the sides toward the heel seat face of the last.

76. In a lasting machine, a base, a shoe support connected to said base, an overhanging lasting head connected to and laterally offset from said base in determinate and angular relation thereto and supporting lasting instrumentalities operative to transmit to said lasting head and to said base through the shoe support during the lasting operation strain tending to spring said base and head out of determinate angular relation, and bracing means rigidly connecting and strengthening said parts against relative divergence through strain.

77. In a lasting machine, a base, a shoe support connected to said base, an overhanging lasting head connected to and laterally offset from said base in determinate angular relation thereto and supporting lasting instrumentalities operative to transmit to said lasting head and to said base through the shoe support during the lasting operation strain tending to spring said base and head out of determinate angular relation, and a tie rod rigidly connected to said head and base to strengthen said parts against relative divergence through strain.

78. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, power means for imparting an operative movement of predetermined extent to said wipers including parts relatively movable manually to adjust the wipers preliminarily in substantial conformity to the contour of the shoe, and additional means for locking said parts in adjusted relation.

79. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, operating means for said wipers including parts movable manually to effect a preliminary adjustment of the wipers to the contour of the shoe while other portions of said operating means are stationary, and pawl and ratchet mechanism for locking said movable parts in adjusted position.

80. In a machine of the class described,

the combination with last and shoe positioning means, of end embracing wipers, manual means for swinging said wipers initially inward to adjust them approximately to the contour of the shoe, means for locking said wipers against reverse outward movement, and additional power operated means for subsequently advancing and closing the wipers over the shoe.

81. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, and operating means for said wipers including slides movable laterally of the shoe while other portions of said operating means are stationary to effect a preliminary adjustment of the wipers to the contour of the shoe.

82. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, operating means for said wipers including members movable relatively to other portions of said means to effect a preliminary adjustment of the wipers, means for imparting adjusting movement to said members, and means automatically operative in said movement of the members to lock them in adjusted position.

83. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, and power operating means for imparting to each of said wipers independently of the other a positive operative movement of predetermined extent, said operating means including parts relatively movable manually to effect a preliminary adjustment of each wiper independently of the other prior to the operation of said means.

84. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, operating means for said wipers including parts movable to effect a preliminary adjustment of the wipers to the contour of the shoe while other portions of said operating means are stationary, and tackers movable inwardly over the shoe and connected to said wipers for preliminary adjustment with them.

85. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for effecting a preliminary adjustment of the wipers to the contour of the shoe, additional power means for subsequently operating the wipers, and tackers connected to the wipers for preliminary adjustment with them and for power effected movement with the wipers subsequently over the shoe.

86. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, oper-

ating means for said wipers including parts movable laterally of the shoe while other portions of said operating means are stationary to effect a preliminary adjustment of the wipers inwardly toward the sides of the shoe, and side tackers positively connected to said wipers to maintain them in the same relation to the wipers in all positions of wiper adjustment.

87. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for operating said wipers, a tacker movable inwardly over the shoe bottom under the control of said wipers, spring means for moving said tacker inwardly, and means for limiting the inward movement of the tacker independently of the movement of the wipers.

88. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for operating said wipers, tackers movable inwardly over the shoe bottom under the control of said wipers in different directions substantially radial to the curve of the edge of the bottom face of the shoe, spring means for moving said tackers inwardly, and means for adjustably limiting the inward movement of said tackers independently of the movement of the wipers.

89. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for operating said wipers, end and corner tackers movable inwardly over the shoe bottom in different directions substantially radial to the curve of the edge of the bottom face of the shoe, means to cause said tackers to move inwardly with the wipers, and means for limiting the movement of the tackers independently of the wipers.

90. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for operating said wipers, end and corner tackers movable inwardly over the shoe bottom with said wipers in different directions substantially radial to the curve of the edge of the bottom face of the shoe for driving tacks beyond the inner edges of the wipers, and means arranged to permit said tackers to yield along the plane of the wipers in response to resistance of the shoe materials and subsequently to move them inward into predetermined relation to the wipers when such resistance is removed.

91. In a machine of the class described, the combination with last and shoe positioning means, of an end embracing band for clamping the upper round the lateral periphery of an end of the last, supporting means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe, and means connected

to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means.

92. In a machine of the class described, the combination with last and shoe positioning means, of an end embracing band, means connected to the end portion of said band to move it adjustably in directions lengthwise of the shoe, and connections to the opposite side portions of the band arranged for engagement with it to determine its contour as it is adjusted lengthwise of the shoe.

93. In a machine of the class described, the combination with end lasting wipers, of an end embracing band, shoe positioning means, and mechanism for operating said shoe positioning means to move the shoe relatively to said band to cause the band to wipe the upper in a direction transverse to the plane of the shoe bottom and for subsequently moving the shoe in the opposite direction to position it relatively to the wipers, said band being mounted for movement with the shoe in said last named positioning movement of the shoe.

94. In a machine of the class described, means for clamping the upper of a shoe at the opposite sides of an end portion of its last, means for moving said clamping means laterally of the shoe to clamping position, and additional means for locking said clamping means against reverse outward movement.

95. In a machine of the class described, an end embracing band, means for moving the opposite side portions of said band inwardly toward a shoe to clamping position, and additional means automatically operative in said inward movement of the sides of the band to lock them against reverse outward movement.

96. In a machine of the class described, an end embracing band, means for moving the opposite side portions of said band inwardly toward a shoe to clamping position, and pawl and ratchet mechanism automatically operative in the inward movement of sides of the band to lock them against reverse outward movement.

97. In a machine of the class described, an end embracing band, operating means for moving the opposite side portions of said band inwardly into clamping relation to a shoe, additional means for locking the sides of the band in clamping position, and mechanism to cause said operating means in its reverse outward movement to operate said locking means to release the band.

98. In a machine of the class described, the combination with an end embracing band, of a shoe support, and operating means for moving said shoe support yieldingly to force the shoe into the band and for then imparting a further positive move-

ment in the same direction to the support to seat the shoe more firmly in the band and for holding it against reverse movement.

99. In a machine of the class described, the combination with an end embracing band, of a shoe support, power operated means for moving said shoe support yieldingly to force the shoe into the band, and additional power operated means for subsequently imparting a further positive movement to the shoe support in the same direction to seat the shoe more firmly in the band.

100. In a machine of the class described, the combination with an end embracing band, of a shoe support, means for operating said shoe support yieldingly to force the shoe into the band, and additional means for imparting a further positive movement to the shoe support in the same direction and for simultaneously closing the band about the end of the shoe.

101. In a machine of the class described, the combination with end lasting wipers, of a shoe support, means for imparting a plurality of successive inward wiping movements to said wipers, and means for operating on said shoe support yieldingly to position the shoe for the first action of the wipers and for holding the support substantially rigid for the subsequent action of the wipers.

102. In a machine of the class described, the combination with end lasting wipers and means for operating them repeatedly, of an end embracing band, a shoe support, and means for relatively moving the shoe support and the band to clamp the shoe and for sustaining the shoe yieldingly against pressure on its bottom face in the first closing movement of the wipers and for holding it substantially rigid against pressure on said face and seating it more firmly in the band for the subsequent action of the wipers.

103. In a machine of the class described, the combination with end lasting wipers, of a shoe support, means for imparting successive operative movements to said wipers, and means for operating on said shoe support to sustain the shoe yieldingly against pressure on its bottom face for the first action of the wipers and to move it toward the plane of the wipers and hold it substantially rigid against pressure on said face for the subsequent action of the wipers.

104. In a machine of the class described, the combination with heel lasting mechanism, of means for positioning a turn shoe for the action of said mechanism including a device to hold the heel end portion of the sole of the shoe turned back from the heel seat face of the last.

105. In a machine of the class described, the combination with heel lasting mecha-

nism, of means for positioning a turn shoe for the action of said mechanism comprising a holddown member for pressing upon the heel seat face of the last in the shoe and additional means for engaging the sole of the shoe to hold it turned back from the heel seat face of the last.

106. In a machine of the class described, the combination with turn shoe heel seat lasting mechanism, and a shoe support movable to carry a turn shoe into operative relation to said mechanism, of a device arranged to operate in such movement of the shoe to turn back the heel end of the sole out of the way of the lasting mechanism.

107. In a machine of the class described, the combination with end lasting wipers, and a holddown for engaging the bottom of the shoe, of manually operated means for jacking the shoe upwardly against said holddown, and power means automatically operative upon the starting of the machine to assume control of the shoe and position it relatively to said holddown for the action of the wipers.

108. In a machine of the class described, the combination with heel seat lasting wipers, and a holddown for engaging the heel seat of the shoe, of treadle means for jacking the shoe upwardly against said holddown before the machine is started, and power means automatically operative subsequently to sustain the shoe against the holddown and to control the shoe during the lasting operation.

109. In a machine of the class described, the combination with heel seat lasting wipers, a band for embracing the heel end of the shoe, and a holddown for engaging the heel seat face of the shoe, of a shoe support movable to carry the shoe into said band, manual means for uplifting the shoe support to engage the heel seat face of the shoe with said holddown, and power operated means for controlling the shoe support during the lasting operation.

110. In a machine of the class described, the combination with heel seat lasting wipers, a band for embracing the heel end of the shoe, and a holddown for engaging the heel seat face of the shoe, of manually operated means for carrying the shoe into said band and for upraising it against the holddown prior to the starting of the machine, and power operated means for subsequently sustaining the shoe against the holddown and for operating the holddown to depress the shoe to cause said band to wipe the upper toward the edge of the heel seat.

111. In a machine of the class described, the combination with a shoe support, heel seat lasting wipers, and a band for embracing the heel end of the shoe, of power operated means for effecting relative bodily movement of said shoe support and band,

first yieldingly and then positively, to seat the shoe in the band prior to the action of the wipers on the shoe.

112. In a machine of the class described, the combination with heel seat lasting wipers, and a band for embracing the heel end of the shoe, of a shoe support movable manually to carry the shoe preliminarily into said band, and power means automatically operative upon the starting of the machine to move said shoe support to force the shoe first yieldingly and then positively into said band.

113. In a machine of the class described, the combination with heel seat lasting wipers, means for imparting to said wipers repeated overwiping movements, and a band for embracing the heel end of the shoe, of a shoe support, and operating mechanism for moving said shoe support first yieldingly and then positively to force the shoe into the band prior to the operation of the wipers and for imparting to said support a further positive movement to seat the shoe more firmly in the band between successive operations of the wipers.

114. In a machine of the class described, the combination with wipers and means for imparting to them repeated wiping movements over an end of a shoe, of a band for embracing the end of the shoe, and means for effecting between repeated movements of the wipers a positive relative movement of the band and the shoe to increase the pressure of the band on the shoe.

115. In a machine of the class described, the combination with a shoe support, and a band for embracing the heel end of the shoe, of mechanism including a cam controlled lever and a spring for moving said shoe support yieldingly to force the shoe into the band, and additional cam controlled mechanism for subsequently imparting a positive movement to the shoe support in the same direction to seat the shoe more firmly in the band.

116. In a machine of the class described, the combination with a shoe support, and a band for embracing the heel end of the shoe, of mechanism for moving said shoe support first yieldingly and then positively to force the shoe into said band, including a spring through which the yielding movement is imparted to the support, and means for varying the stress of said spring.

117. In a machine of the class described, the combination with a band for embracing the heel end of a shoe, of a shoe support movable manually to carry the shoe preliminarily into the band, power operated mechanisms for subsequently imparting to said shoe support yieldingly a further movement to force the shoe into the band, and additional power operated mechanism operative in time relation to said first mecha-

nism to impart to the shoe support a further positive movement to seat the shoe more firmly in the band.

118. In a machine of the class described, the combination with a support for a last and its shoe materials, a band for embracing the heel end of the shoe, and means for closing said band about the end of the shoe, of power yieldingly operated means for operating said shoe support to force the shoe into the band before the band begins to close about the shoe.

119. In a machine of the class described, the combination with a shoe support, a band for embracing the heel end of the shoe, and means for closing said band about the end of the shoe, of means for operating said shoe support to force the shoe yieldingly into the band while the band is in substantially open position, and additional power operated means for forcing the shoe positively into the band during the closing of the band.

120. In a machine of the class described, the combination with a shoe support, a band for embracing an end of the shoe, and means for closing said band about the end of the shoe, of operating devices for effecting respectively in time relation to the closing of the band different movements of the shoe support lengthwise of the shoe to force the shoe into the band.

121. In a machine of the class described, the combination with a band for embracing an end of a shoe, and means for closing the band about the end of the shoe, of means for effecting relative bodily movement of the band and the shoe lengthwise of the shoe, first yieldingly and then positively, in time relation to the closing of the band to press the end face of the shoe against the band.

122. In a machine of the class described, the combination with a band for embracing an end of a shoe, and means for closing the band about the end of the shoe, of power operated mechanism for effecting a yielding relative bodily movement of the shoe and the band lengthwise of the shoe to seat the shoe in the band before the band begins to close, and additional power operated mechanism for effecting a similar relative bodily movement of the shoe and the band positively during the closing of the band.

123. In a machine of the class described, the combination with a shoe support and a shoe end embracing band relatively movable to position an end of the shoe preliminarily in said band, of operating means for effecting after the shoe has been thus positioned a positive relative movement of said shoe support and band lengthwise of the shoe to seat the shoe firmly in the band.

124. In a machine of the class described,

the combination with a shoe support, and a band for embracing an end of the shoe, of operating mechanism including a yielding element for effecting an indeterminate relative bodily movement of the shoe support and the band lengthwise of the shoe to seat the end face of the shoe against the band while the band is in substantially open position, and mechanism for thereafter effecting a similar relative movement of the shoe support and the band of automatically determined extent to increase the pressure of the band against the end face of the shoe.

125. In a machine of the class described, the combination with a shoe support, and a band for embracing the heel end of the shoe, of mechanism for imparting to the shoe support yieldingly a movement of indeterminate extent to force the shoe into the band while the band is in substantially open position, and mechanism for imparting to said shoe support in time relation to the closing of the band about the shoe a further movement of automatically determined extent to press the end face of the shoe more firmly against the band.

126. In a machine of the class described, the combination with a shoe support, end-embracing wipers, and a band for embracing the heel end of the shoe, of operating mechanism for effecting in time relation to each other a relative bodily movement of the shoe support and the band lengthwise of the shoe to seat the shoe in the band and a relative bodily movement of the shoe and the band heightwise of the shoe to wipe the upper toward the edge of the heel seat before the wipers complete the wiping of the upper inwardly from said edge.

127. In a machine of the class described, the combination with end lasting mechanism and a shoe support, of controlling mechanism for said shoe support automatically operative to sustain the shoe yieldingly against pressure on its bottom face during a portion of the lasting operation and to hold the shoe substantially rigid against such pressure during the remainder of the lasting operation.

128. In a machine of the class described, the combination with a shoe support, end embracing wipers, an end embracing band, and means for moving the shoe relatively to said band to upwipe the upper, of means for holding the shoe support yieldingly against pressure on the bottom face of the shoe during a portion of the lasting operation including the upwiping of the upper and for subsequently holding the support substantially rigid against such pressure on the shoe.

129. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for advancing and closing said wipers over

an end of the shoe, of side tackers positively connected to the wipers for movement inwardly over the shoe into tacking position, and end and corner tackers also movable inwardly under control of the wipers, said end and corner tackers being yieldable relatively to the wipers in response to resistance to their inward movement.

130. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for advancing and closing said wipers over an end of the shoe, of side tackers positively connected to the wipers for movement inwardly over the shoe into tacking position, additional tackers also movable inwardly under control of the wipers, spring means for imparting inward movement to said additional tackers while permitting them to yield relatively to the wipers in response to resistance to such inward movement, and devices co-operating with said spring means to determine the positions of said additional tackers for the tacking operation.

131. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for advancing and closing said wipers over an end of the shoe, of side tackers positively connected to the wipers for movement inwardly over the shoe into tacking position, end and corner tackers also movable inwardly under control of the wipers and yieldingly positioned relatively to the wipers, and means for adjusting the different tackers relatively to the wipers to vary the tacking positions.

132. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for closing said wipers over an end of the shoe, of tackers mounted for inward movement laterally of the shoe under control of said wipers, spring means against the resistance of which the tackers are yieldable relatively to the wipers while the wipers continue their inward movement, and means for limiting the inward movement of the tackers independently of the wipers and the shoe to determine the tacking positions.

133. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for closing said wipers inwardly over an end of the shoe, of end and corner tackers mounted independently of one another for forward and inward movements in converging paths into position for fastening the margin of the

upper, and operating mechanism for moving said tackers and wipers inwardly together including yielding elements arranged to permit the tackers to yield relatively to the wipers while the wipers continue their inward movement.

134. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for closing said wipers inwardly over an end of the shoe, of a plurality of tackers mounted independently of each other for inward movements over the shoe in converging paths, yieldable means for moving the tackers inwardly with the wipers, and means for limiting the inward movements of the tackers independently of the wipers and the shoe.

135. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for closing said wipers inwardly over an end of the shoe, of a plurality of tackers mounted independently of each other for inward movements over the shoe in converging paths, means for moving said tackers yielding inward with the wipers, and a stop mechanism associated with each of said tackers to limit its inward movement independently of the shoe and the wipers and adjustable to vary said limit of movement.

136. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for closing said wipers inwardly over an end of the shoe, of a plurality of tackers movable inwardly over the shoe, operating means for moving said wipers and tackers inwardly together, and means for stopping the inward movements of the tackers while the wipers continue their inward movement to overwipe the margin of the upper beyond the locations where the tacks are to be driven.

137. In a machine of the class described, the combination with shoe positioning means, end embracing wipers, and means for moving said wipers inwardly different distances in different overwiping operations, of tackers movable inwardly over the bottom of the shoe, means for moving said tackers yieldingly inward with the wipers, and limiting means for stopping the inward movements of the tackers before the wipers arrive at the limit of their greater movement over the shoe.

In testimony whereof I have signed my name to this specification.

RONALD F. McFEELY.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,558,737, granted October 27, 1925, upon the application of Ronald F. McFeely, of Beverly, Massachusetts, for an improvement in "Lasting Machines," errors appear in the printed specification requiring correction as follows: Page 11, line 36, for the word "position" read *positioned*, and line 124, for the word "iron" read *ironed*; page 13, claim 9, strike out present line 106 and insert instead *to the end and corners of the wiper element*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of December, A. D. 1925.

[SEAL.]

WM. A. KINNAN,
Acting Commissioner of Patents.

Sept. 16, 1924.

1,508,394

C. H. HOYT

FASTENING INSERTING MACHINE

Filed Jan. 28, 1920

4 Sheets-Sheet 1

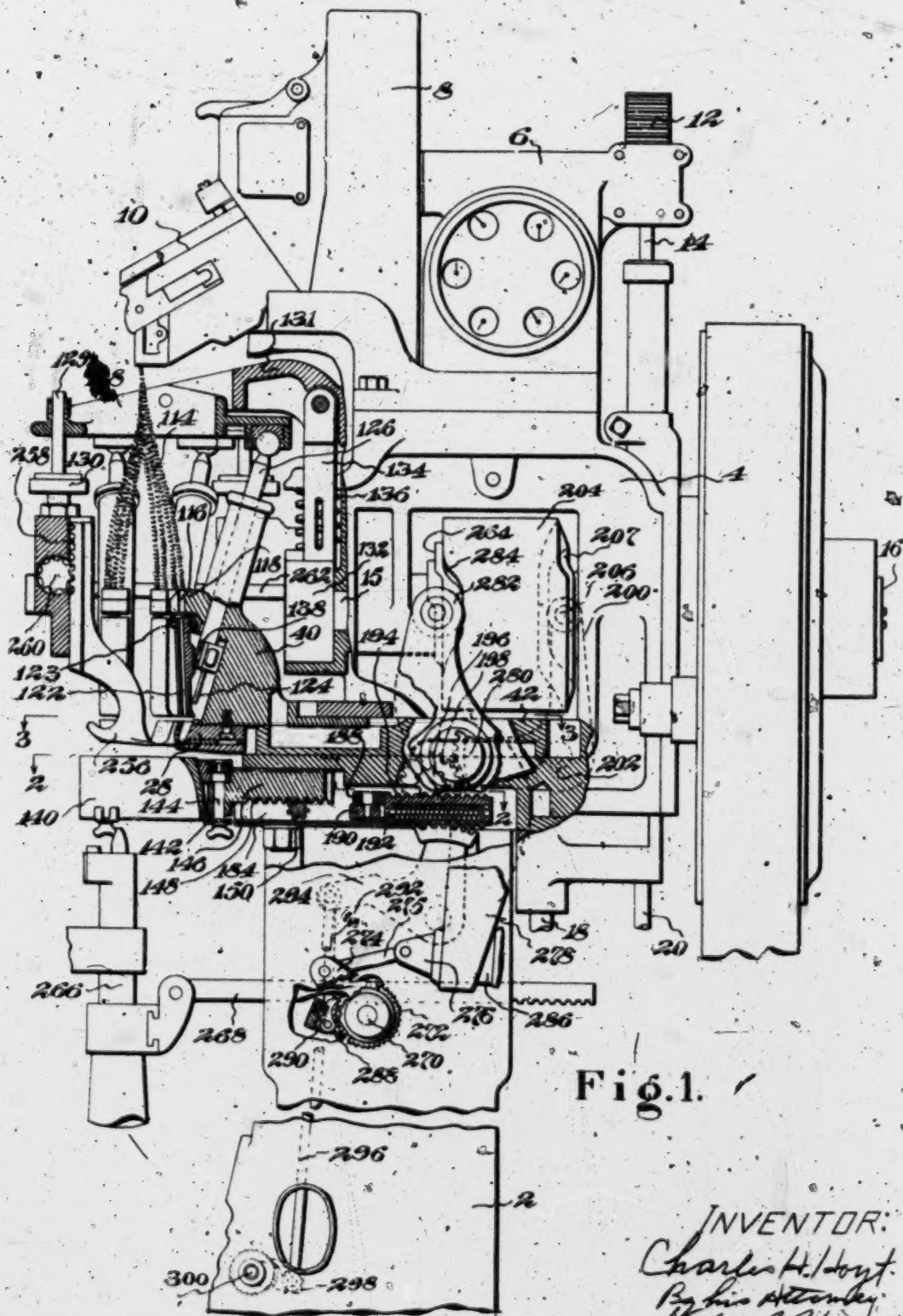


Fig. 1.

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FASTENING INSERTING MACHINE

Filed Jan. 28, 1920

4 Sheets-Sheet 2

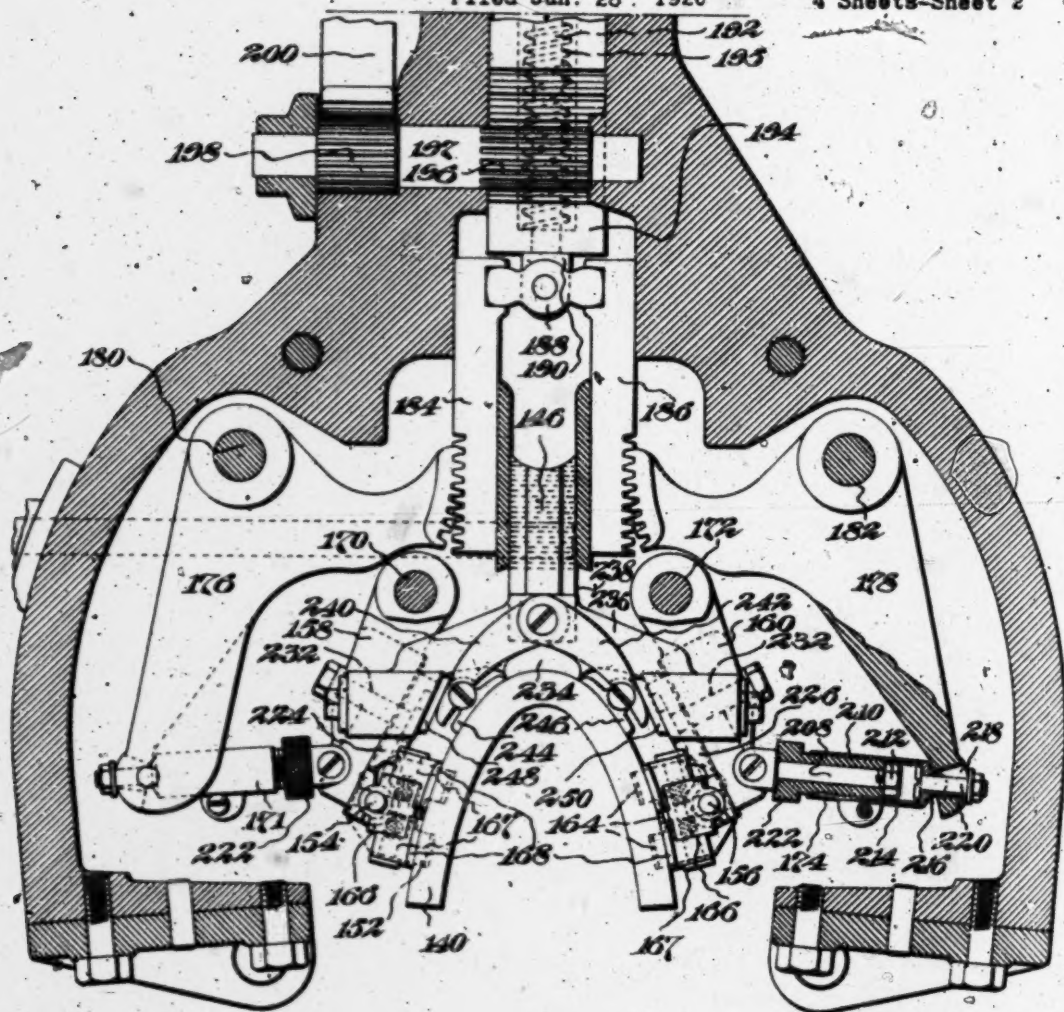
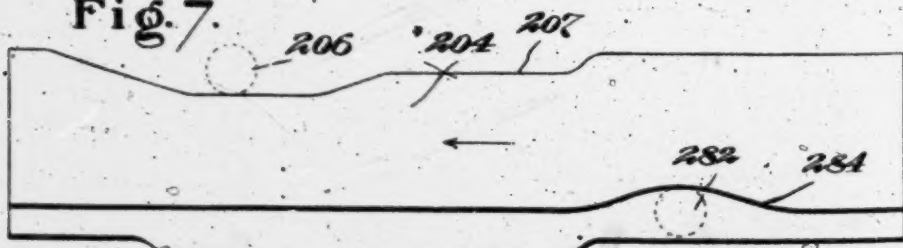


Fig. 2.

Fig. 7.



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FASTENING INSERTING MACHINE

Filed Jan. 28, 1920 4 Sheets-Sheet 3

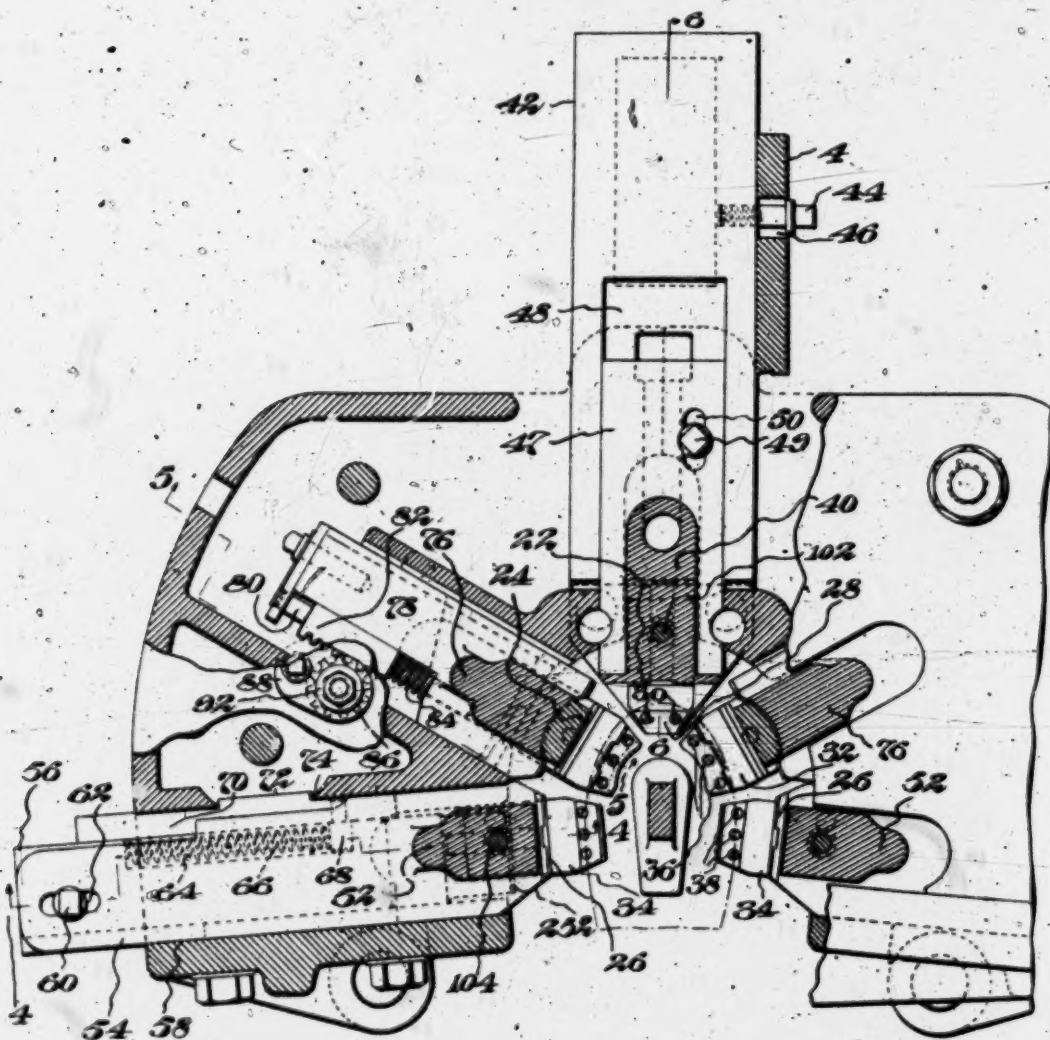


Fig. 3.

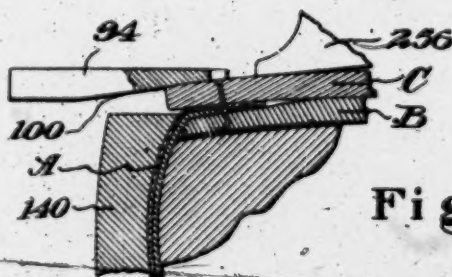


Fig. 3.

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1,508,394

FASTENING INSERTING MACHINE

Filed Jan. 28. 1920

4 Sheets-Sheet 4

Fig. 4.

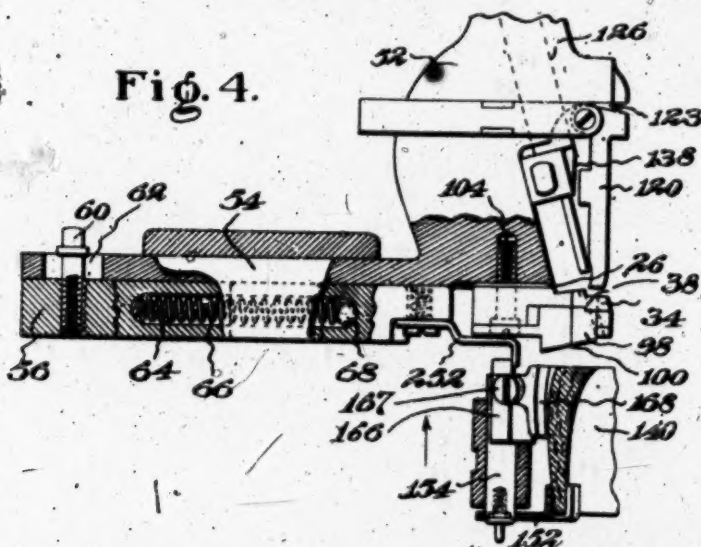


Fig. 5.

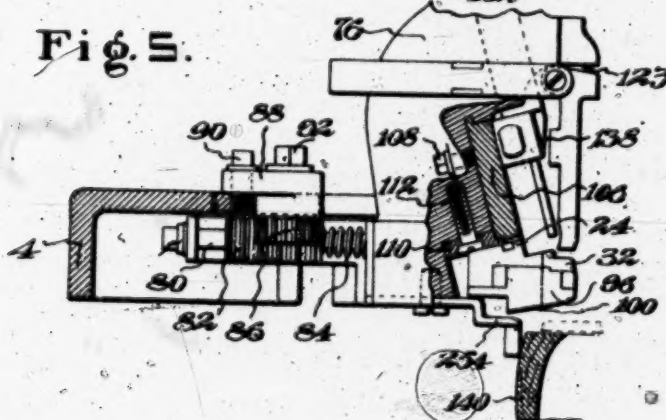
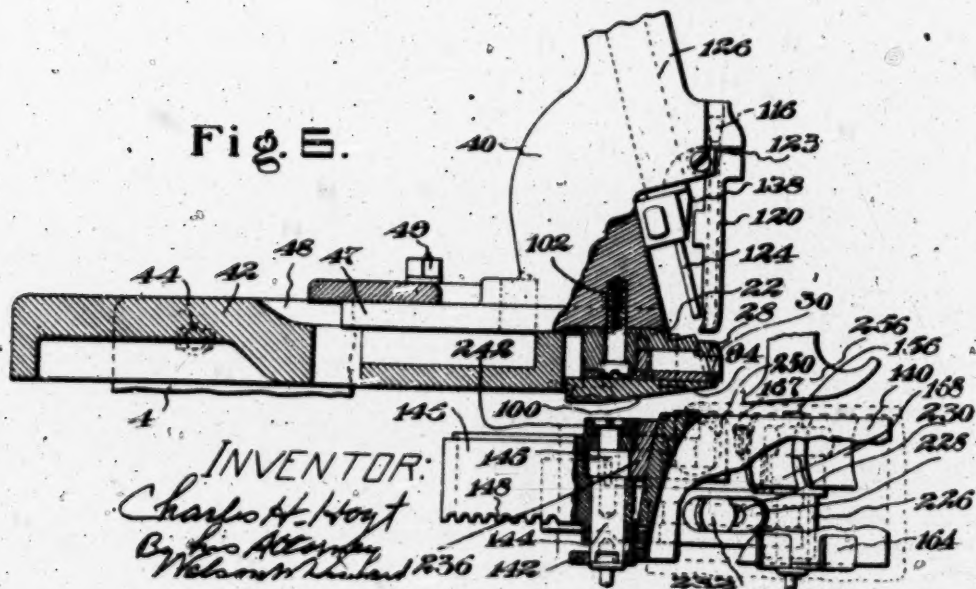


Fig. 6.



INVENTOR:

Charles H. Hoyt

By his Attorney
Wm. H. H. H.

[Illegible handwritten text]

145

148

144
5 142

10

UNITED STATES PATENT OFFICE.

CHARLES H. HOYT, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

FASTENING-INSERTING MACHINE.

Application filed January 28, 1920. Serial No. 354,726.

To all whom it may concern:

Be it known that I, CHARLES H. HOYT, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Fastening-Inserting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to fastening inserting machines, the embodiment of the invention herein illustrated and described being particularly intended for the attachment of the heel ends of outsoles in the manufacture of boots and shoes. It is recognized, however, that the invention as a whole and various features thereof are not limited in their application to the particular use illustrated, and that they may be usefully employed in other relations.

In the manufacture of boots and shoes, it is the usual practice to attach the heel seat end of the outsole to the upper and insole by fastenings inserted about the periphery of the heel seat, and it has also been customary to utilize for the insertion of the fastenings, machines of the type which insert fastenings successively. Although such machines are commonly provided with a shoe support and means for automatically feeding the shoe past the point of fastening insertion and for guiding the shoe as it is fed, it is necessary in order to insure that the fastenings will be rightly disposed with reference to each other and to the edge of the heel seat that the shoe be manipulated in certain definite relations to the parts of the machine during the driving of the fastenings. Such manipulation of the shoe requires the exercise of considerable skill and care on the part of the operator.

It is an object of the invention to provide a machine for attaching heel seats which can be operated very quickly and easily, and the use of which will require a minimum of skill and care on the part of the operator. To this end I have devised a novel organization including fastening inserting means of the type by which a number of fastenings are inserted in a piece of work in a single operation, the construction of the fastening inserting devices being such that substantially no manipulation of the

work by the operator is called for other than that required for the presentation of the work to the machine and its removal therefrom.

It has hitherto been proposed to attach heel seats by means of machines constructed to insert a number of fastenings at a time. So far as applicant is aware, however, such machines have invariably comprised a single die plate or the like having openings to receive fastenings for presentation to all of the drivers of the machine. Manifestly, if it were desired to employ such machines for attaching heel seats of different sizes and shapes, it would be necessary to modify the arrangement of the openings in the die plate and the construction of the plate in order to maintain the relation of the fastenings and the edge of the heel seat uniform and properly to conform the edge of the heel seat end of the sole to the edge of the upper and insole. For this reason, it has been customary in the design of such machines to mount the die plate in such a way that it can be removed from the machine to enable a die plate of a different character to be substituted for it, when it is desired to adapt the machine for the attachment of heel seats of different dimensions from those previously operated upon. The substitution of different forms of die plates necessitates corresponding substitutions of the awls and drivers and other elements of the fastening inserting instrumentalities, thus rendering the adaptation of the machine to operation on heel seats of varying dimensions troublesome, in consequence of which such machines have not been used to any extent for attaching heel seats.

Machines have also been devised for inserting a number of fastenings substantially simultaneously which are provided with a plurality of separate fastening inserting mechanisms or units disposed correspondingly to the contour of a portion of the bottom of a shoe. Machines of such character, have, for instance, been employed for lasting shoes. Such machines, however, have not, to applicant's knowledge, been used for attaching heel seats nor has any of them been so constructed as to be capable of use for that purpose. One reason, among others, why such machines, as heretofore constructed, have not been adapted for use for attaching heel seats is that they have not

been provided with mechanism operable to shape the heel seat end of the sole to the upper and insole.

An important feature of this invention resides in a novel fastening organization of the multiple or "gang" type constructed for effective operation upon outsoles and including provision for relative movement of different fastening mechanisms to position the fastenings, the machine herein shown as an illustrative embodiment of the invention having a plurality of separate fastening inserting mechanisms and including means for applying conforming pressure to the outsole. The separate fastening inserting mechanisms in the construction shown are disposed correspondingly to the periphery of a heel seat and are made adjustable thus enabling applicant's machine to be readily adapted for operation on work of different characteristics, inasmuch as the removal of any part of the machine and the substitution of another part therefor is rendered unnecessary. The disadvantages attendant upon the use of prior machines of this type for the attachment of heel seats are thereby obviated. In the illustrated exemplification of the invention, each of the separate fastening inserting mechanisms comprises a throat having its under-side inclined downwardly and outwardly from its fastening receiving opening or openings for engagement with the tread face of a heel seat adjacent to its marginal edge to press the edge of the heel seat end of an outsole into close conformity with the edge of an upper and insole.

In accordance with a further feature the invention provides novel means of control for fastening inserting means, the machine illustrated having means for automatically positioning the fastening inserting mechanisms to accommodate them to heel seats of different dimensions so as to cause the fastenings to be inserted in proper relation to the contour edge of the heel seat and to enable the marginal edge of the heel seat to be accurately conformed to the upper and insole. In the construction shown the arrangement of the fastening inserting mechanisms when a piece of work is in position to have fastenings inserted in it by said mechanisms is determined by means for clamping the work. In the illustrated exemplification of the invention, the work clamping means comprises a flexible band acted upon by moving parts of the machine to conform it to the work and operatively connected to certain of the fastening inserting mechanisms on each side of the work. Other fastening inserting mechanisms are provided on each side of the work, which are controlled by the clamping band independently of the first-named fastening inserting mechanisms. It will be recognized that in this as well as other features the invention in its more

general aspects is not limited to machines for fastening outsoles.

Other important features of the invention, including a novel construction of shoe end clamping means, will appear as the description proceeds and will be pointed out in the appended claims.

In the drawings,

Fig. 1 is a view in elevation and partly in cross-section of the upper part of a machine constructed in accordance with the invention;

Fig. 2 is a plan view substantially along the line 2—2 of Fig. 1;

Fig. 3 is a plan view substantially along the line 3—3 of Fig. 1;

Fig. 4 is a view in elevation, partly in cross-section substantially along the line 4—4 of Fig. 3, of one of the end fastening inserting mechanism or units and its connections to the work clamp;

Fig. 5 is a view in elevation, partly in cross-section substantially along the line 5—5 of Fig. 3, of one of the corner fastening inserting units and the work clamping band;

Fig. 6 is a view in elevation, partly in cross-section substantially along the line 6—6 of Fig. 3, through the rear fastening inserting unit and the work clamp;

Fig. 7 is a diagrammatic view of the main cam, illustrating the manner of operation of certain features of the invention; and

Fig. 8 is a cross-section of a shoe in nail driving position.

By way of example, the invention is illustrated as embodied in a machine of the same general type as that disclosed in United States Letters Patent to R. F. McFeely, No. 1,129,881, granted March 2, 1915, for improvements in machines for use in the manufacture of boots and shoes. The machine comprises a column 2 having mounted thereon a head 4 crowned by a frame 6 upon which is mounted a hopper 8 for supplying fastenings to raceways 10 at the front of the machine head. The hopper 8 is operated by means of a rack 12 carried by a rod 14 which is reciprocated by a cam (not shown) on a shaft 15 journaled in the head 4. The shaft 15 may be driven from a short shaft 16 by reducing gears of the character fully shown and described in the co-pending application of R. F. McFeely, Serial No. 115,230, filed August 16, 1916, for improvements in lasting machines. The shaft 16 may be operated as shown in Patent No. 1,129,881, and the operation of the shaft may be controlled by clutch mechanism of the character contemplated for the machine of the above-cited patent and fully shown and described in United States Letters Patent No. 791,966, granted on an application of R. F. McFeely, June 6, 1905. The clutch mechanism comprises a rod 18 adapt-

ed to be controlled by the operator in any suitable way, as for instance, by a foot treadle. When the rod 18 is raised, it actuates mechanism for causing movement to be transmitted to the shaft 16. The operation of the shaft 16 is discontinued at the end of each full revolution of the shaft 15 by the depression of a rod 20.

The illustrated machine is especially designed to insert fastenings of the kind generally denominated nails, and for convenience of description, certain features of the machine will be described by reference to their functions when the machine is used for inserting nails. It will be understood, however, that the term "nail" is used for purposes of exposition merely and not by way of limitation.

In accordance with the invention, the machine is provided with a plurality of nail inserting mechanisms or units, each comprising a throat and means for driving nails through passages in the throat. In the illustrated construction (see Fig. 3), there are provided a rear nail inserting unit 22 and two side nail inserting units 24 and 26 on each side of the space defined by said units. As shown also, the throat 28 of the rear unit is formed with two nail receiving passages 30, whereas each of the throats 32 and 34 of the side units 24 and 26 respectively, is provided with three nail receiving passages designated 36 and 38. It is manifest however, that the number of nail receiving passages in the throats 28, 32, and 34 may be varied without departing from the principles of the invention, and that the number and arrangement of the nail inserting mechanisms or units may also be modified. The rear nail inserting unit 22 comprises a casting 40 carried by a plate 42 mounted slidably in the head 4 of the machine. The plate 42 is adjustably secured to the head 4 by means of a screw or the like threaded into the plate and passing through a slot 46 in the head. The casting 40 has a part 47 extending rearwardly therefrom and received in a channel 48 of the plate 42. Adjustment of the casting 40 relatively to the plate 42 is provided for by means of a screw bolt 49 passing through a slot 50 in the extension 47 into the plate 42. With this arrangement, the throat 28 may be adjusted forwardly or backwardly on the machine head 4 in order properly to position the nail inserting unit 22 for operation on heel seats of different dimensions.

For convenience of description the nail inserting units 26 will be hereinafter sometimes termed the "end" units, and the units 24 will be referred to as the "corner" units. A description of one of the end units 26 will suffice for both of said units, inasmuch as they are similarly constructed. Likewise, a description of one of the corner units 24

will suffice for both. The end unit 26 comprises a casting 52 formed with a rearwardly extending part 54 adjustably secured to a plate 56 mounted for translatory movement in a guideway 58 of the head 4. As shown, the means for securing the casting 52 to the plate 56 comprises a screw 60 passing through a slot 62 in the extension 54. The plate 56 is recessed at 64 (see Fig. 4) to receive a spring 66 interposed between the rear wall of the recess and a pin 68 projecting into the recess. In the illustrated construction, the pin 68 is carried by a plate 70 having a lateral projection 72 fitting into an opening 74 in the adjacent wall of the head 4 of the machine. From the foregoing, it is apparent that the nail inserting unit 26 will normally be maintained by the spring 66 in a position determined by engagement of the pin 68 with the front wall of the recess 64.

The corner unit 24 comprises a casting 76 carried by a plate 78 slidably mounted in a guideway in the head 4 (see Figs. 4 and 5). The plate 78 may be secured to the casting 76 in any suitable manner or may be formed integrally therewith. Preferably, and as shown, means is provided for normally urging the casting 76 and the throat 32 mounted thereon toward the space defined by the nail inserting units. Conveniently, such means comprises a rod 80 on the plate 78 and a rack member 82 slidably supported on the rod, between which and a shoulder on the plate 78 is interposed a compression spring 84. To the end that the tension of the spring 84 may be regulated, the position of the rack member 82 is adjustably determined by a pinion 86 meshing with the rack. The pinion 86 is supported by a bracket 88 secured to the head 4 by a screw, or the like, 90. Rotation of the pinion 86 will effect adjustment of the rack member 82 on the rod 80. A nut 92 retains the pinion 86 in any position to which it may be moved.

The outer surface of the heel seat portion of an insole after it has been fitted to a last is more or less convex in planes transverse to the contour line of the heel seat. Consequently, the margin of the upper where it is folded over the insole in the lasting operation is inclined downwardly toward the edge of the insole when the lasted shoe is disposed in inverted position, as clearly appears from Fig. 8 in which the upper is designated A and the insole B. It is desirable that the heel seat portion C of the outsole shall be shaped to correspond with the configuration of the upper and insole. Accordingly, I have provided the throats 28, 32, and 34 with plates 94, 96 and 98 respectively having their lower surfaces 100 inclined downwardly and outwardly from their nail receiving passages to

a degree corresponding substantially with the inclination of the upper and insole. The surfaces 100 of the plates 94, 96, and 98 engage the tread surface of the heel seat end of the sole adjacent to its marginal edge and press it into close contact with the folded over margin of the upper. It is recognized that the plates 94, 96, and 98 upon which the heel seat molding surfaces are formed may be constructed integrally with the throats 28, 32, and 34 respectively, or means separate from the throats may be provided for shaping the heel seat without departing from the principle of the invention.

The nail receiving and controlling parts of the throats 28, 32 and 34 may be, and as shown, are constructed as fully illustrated and described in the copending application, above referred to. Inasmuch as the organization of such parts of the throats constitutes per se no part of the present invention, a further description thereof is deemed unnecessary. The throats may be secured to their respective castings in any suitable manner. As shown in Figs. 4 and 6, the throats 28 and 34 are fixed to the castings 40 and 52 by screws 102, 104 respectively, and the throat 32 is formed with an upstanding projection 106 which is dove-tailed into the front face of the casting 76 and retained in position by a set screw 108 and a plate 110 secured by screws 112.

The means for supplying nails to the nail receiving passages of the throats 28, 32 and 34 and for driving the nails is also more fully set forth in the copending application above referred to. Such means comprises flexible tubes 114 (see Fig. 1) adapted to receive nails from the several raceways 10. The tubes 114 communicate with openings 116 in ears 118 on the castings 40, 52, and 76 respectively. Each of said castings has pivoted thereto below the ear 118 a conductor 120 having openings 122 registering with the openings 116 in the ear 118 and normally positioned by springs 123 so as to deliver nails into the passages in the throat. The nails are forced into the work by drivers 124 carried by driver bars 126 arranged to be simultaneously actuated by a member 128 slidably mounted on posts 129 and limited in its downward movement by buffers 130. The member 128 is carried by a lever 131 fulcrumed in the head 4 of the machine and elevated by a cam 132 on the shaft 15 through the agency of an arm 134. The lever 131 is impelled downwardly to cause the drivers 124 to project the nails into the work by springs 136. The driver bars 126 have angular faces 138 which swing the conductors 120 out of the way of the drivers 124 in their nail driving movements.

Means is provided for presenting work to

the nail inserting mechanisms in a manner to facilitate operation on the work. This means preferably comprises a clamping band 140 which is made substantially U-shaped to accord with the configuration of the counter or heel end of a shoe on which it is designed to act. The clamping band 140 is composed of leather or other suitable flexible material. In order to afford support for the band at its rear end or, in other words, at the bight of the band, a clip 142 (see Figs. 1 and 6) is riveted to the band at such point. The clip 142 is in turn carried by a stud shaft or post 144 loosely mounted in a carrier 146 slidable in a guideway on the head 4. Downward movement of the post 144 is limited by an enlarged part 145. In order to permit the clamping band 140 to be appropriately positioned for operation on shoes of varying sizes, the carrier 146 is adjustably secured to the head 4. A convenient means for effecting such adjustment comprises teeth 148 on the under side of the carrier meshing with a pinion 150 (see Fig. 1). The shaft of the pinion 150 may be provided with a handle to facilitate its rotation and may be retained in angularly adjusted position in various ways as will be obvious to those skilled in the art. Suitable means involving a pawl carried by the shaft and a ratchet mounted on the head 4 is shown in the copending application heretofore referred to.

The legs or sides of the clamping band 140 are supported by clips 152 carried by posts 154 and 156 mounted in arms 158 and 160 respectively. Each of the clips 152 is formed with upwardly extending flanges 164 (see Figs. 2 and 4) between which the lower edge of the band 140 is received. The legs of the band are constrained against transverse movement relatively to the flanges 164 but may have endwise movement with relation to said clips for a purpose which will hereinafter appear. The posts 154 and 156 have blocks 166 pivoted thereon for movement in horizontal planes and plates 168 are fulcrumed to the blocks 166 at 167 for movement in vertical planes. The pressure plates 168 have concave surfaces disposed for engagement with the outer surface of the band 140 to press it against the work, and the double pivotal movement of the plates enables them to contact closely with the band regardless of changes in the configuration of the band resulting from the presentation of work of different dimensions to the machine. The arms 158 and 160 are fulcrumed on the head 4 at 170 and 172 respectively and, as shown, are operated by links 171 and 174 from bell crank levers 176 and 178 pivoted at 180 and 182 to the head 4. Each of the bell crank levers 176 and 178 is formed with a toothed segmental portion, the segments being arranged to

mesh with rack bars 184 and 186 slidably mounted in the head 4. The arms 158 and 160 are moved synchronously toward and from the work to cause the band 140 to clamp or release the work by mechanism comprising an equalizer 188 having its ends received in recesses in the ends of the rack bars 184 and 186 respectively and carried by a head 190 on a rod 192 sleeved into a housing 194. A spring 195 interposed between the front wall of the housing 194 and a nut, or the like, on the rod 192 transmits movement from the housing yielding to the rod and thus to the arms 158 and 160 in a direction to press the clamping band 140 against the work. The housing 194 is toothed on its upper side for meshing engagement with a pinion 196. The shaft 197 (see Fig. 2) of the pinion 196 carries a larger pinion 198 co-acting with the toothed end of a bell crank lever 200 fulcrumed at 202 on the head 4 and having a roll 206 riding on a cam track 207 on the cam wheel 204.

In order that the degree of pressure on the legs of the clamping band 140 may be conveniently changed, if desired, or maintained uniform during operation on work of different dimensions, each of the links 171 and 174 comprises a rod 208 having its head pivotally connected to the arm 158 or 160 and its shank received in a sleeve 210 clamped on the rod between its head and a nut 212. The sleeve 210 is threaded on its outer surface for engagement with internal threads on the split thimble 214 having a rounded boss 216 on its closed end seated in an opening 218 in the arm 176 or 178. A rod 220 passing through the boss 216 secures the thimble 214 to the arm. With this construction, rotation of the sleeve 210 will lengthen or shorten the link 171 or 174, thus increasing or decreasing the pressure of the clamping band 140 on the work. The head 222 of the sleeve 210 is preferably knurled to facilitate the rotation of the sleeve.

To the end that the pressure plates 168 may be caused to act on the clamping band 140 when operating on shoes of certain dimensions, for example, relatively large shoes, at points more nearly adjacent to the ends of the band than when operating on small shoes, the posts 154 and 156 are mounted in plates 224 and 226 grooved into the arms 158 and 160 for adjustment longitudinally of the arms. In the illustrated construction (see Figs. 2 and 6), the plates 224 and 226 are channelled at 228, and the bottoms of the channels are formed with slots 230 through which pass bolts 232 having their heads received in the channels 228.

The back or bight of the band is maintained firmly against rearward movement by a brace 234 having its forward surface concave to conform with the outer surface of the band. As shown, the brace 234

is formed integrally with a yoke 236 loosely mounted on the enlarged portion 145 of the stud shaft 144. The yoke 236 is constrained against angular movement on the post 144 by engagement of its plane rear surface 238 with a shoulder surface on the carrier 146. Pivoted on the post 144 above the yoke 236 are arms 240 and 242 having pressure plates 244 and 246 pivoted thereto for movement in a horizontal plane. The plates 244 and 246 are yieldingly forced against the band 140 by spring-pressed plungers 248 and 250 seated in bosses on the ends of the yoke 236. The plates 244 and 246 engage the corners of the clamping band 140 and force such portions of the band into firm contact with the work. The provisions hereinbefore described for endwise movement of the legs of the clamping band 140 between the flanges 164 of the clips 152 permit the corners of the band to be pressed closely against the work regardless of variations in the shape or size of the work.

It will be clear from the foregoing that the nail inserting mechanisms or units 22, 24, and 26 may be moved relatively to each other and to the work to accommodate them to the requirements of work of different dimensions. As also clearly pointed out, the rear nail inserting unit 22, in the present exemplification of the invention, is designed to be adjusted manually. I prefer, however, for the sake of convenience of operation and flexibility of adjustment that the operative positions of the nail inserting units 24 and 26 be determined by the work itself. As shown, the clamping band 140 and its operating means are utilized to this end. The posts 154 and 156 are extended upwardly for engagement with the downturned ends of metal strips 252 secured to the plates 56 of the end units 26, and the plates 78 of the corner units 24 carry strips 254 whose downturned ends contact with the outer surface of the clamping band. Consequently, as the arms 158 and 160 are moved toward the work, the end units 26 are forced inwardly against the resistance of the springs 66, and the corner units 24 move inwardly with the band 140 under the impulse of the springs 84. The adjustable connection 60, 62 between the end units 26 and the plates 56 enables the throats 34 to be adjusted with relation to the heel band, thus permitting the distance of the fastenings from the edge of the heel seat to be varied as desired. Corresponding adjustments of the throats 32 of the corner units can be effected by shifting the strips 254 endwise on the plates 78.

In order to permit the marginal edge of the outsole to be accurately conformed to the edge of the upper and insole, the shoe is presented to the clamping band 140 with the surface of the outsole spaced from the upper surface of the band. It is desirable,

however, that the shoe be clamped as close to the outsole as possible and still permit the edge of the heel seat to be pressed down to the required degree. Means is accordingly provided for positioning the work with relation to the clamping band. In the illustrated construction, such means comprises a member 256 disposed for engagement with the surface of the heel seat within the space defined by the nail inserting units 22, 24 and 26. The work positioning member 256 is mounted for vertical sliding movement on the head 4 and, as shown, is provided with teeth 258 meshing with a pinion 260. The pinion 260 is operated by a rod 262 which derives its movement from a cam roll 263 (see Fig. 7) registering with the track 264 of the cam 204. Suitable operating connections between the work positioning member 256 and the cam 204 are described in the copending application above cited.

The work is supported on a jack 266 which may be constructed and operated substantially as shown and described in the aforementioned application. The jack 266 is moved in a direction to carry the work into the grip of the clamping band 140 by a rack bar 268 meshing with a pinion on a shaft 270 journaled in the column 2 of the machine. The shaft 270 carries a ratchet wheel 272 operated by a ratchet (not shown) on an arm 274 which is in turn connected to a link 275 pivoted to the head 206 of a rod mounted loosely in the end of a lever 278. The lever 278 is fulcrumed on the head 4 of the machine at 280 and carries a roll 282 registering with a track 284 on the cam wheel 204. The rod having the head 276 is enclosed on the side of the lever 278 opposite from said head by a sleeve 286, between which and an enlarged portion of the rod is interposed a spring by which movement of the lever to the right (Fig. 1) is transmitted yieldingly to the shaft 270 and the jack 266. The shaft 270 also carries a ratchet 288 to which movement is transmitted by a pawl 290 operated by a link 292 connected to one arm of a bell crank 294 fulcrumed on the column 2 on the machine and having its other arm in the form of a toothed segment meshing with teeth on the under side of the housing 194. A second link 296 extends from the bell crank lever 294 to an arm 298 on the shaft 300 journaled in the column 2 of the machine frame. A pawl carried by the arm 298 and acting on a ratchet on the shaft serves to impart upward movement to the jack 266 in a manner which will be obvious to those skilled in the art. The link 296 is preferably made in two sections having a spring interposed between them, as shown in the aforementioned application, to the end that the movement of the bell crank lever

294 will be yieldingly communicated to the jack 266.

The clutch mechanism is arranged to bring the machine to rest with the arms 158 and 160 separated to the maximum extent to open the clamping band 140. The jack 266 occupies at the same time its fully lowered position and is tipped forwardly to facilitate the presentation of work to the jack. The work positioning member 256 is at the limit of its downward movement. To operate the machine, the operator places the work on the jack 266 and by means of a treadle (not shown) raises the jack to bring the heel seat into engagement with the positioning member 256 which, as before stated, locates the work with the edge of the heel seat spaced by the proper distance from the upper edge face of the heel band. He then depresses a treadle to start the machine. When power is applied to the machine the cam 204 is rotated in the direction of the arrow on Fig. 7. As the cam rotates the roll 282 on the lever 278 rides on a raised portion of the cam track 284, thereby moving the jack 266 back yieldingly to thrust the work into the band 140. As the cam continues to rotate, a raised portion of the cam track 207 acts on the roll 206 of the bell crank lever 200 to move the arms 158 and 160 inwardly to press the clamping band 140 against the work and simultaneously to actuate the bell crank lever 294. When the bell crank lever 294 is actuated, it moves the jack 266 positively to thrust the work further into the grip of the band 140 and exerts an upward pull on the link 296 thus tending to move the jack upwardly. By reason, however, of the upper surface of the heel seat being in engagement with the work positioning member 256, the jack 266 is moved upwardly at this time only to the extent to which the work yields, the main movement of the link 296 being taken up by the spring connections in said link and serving to apply pressure on the work. In the continued operation of the machine, the roll 263 which controls the work positioning member 256, moves onto a depressed part of the cam track 264, thus permitting the positioning member 256 to be lifted. At the same time, a further rise on the cam track 207 engages the cam roll 206 on the bell crank lever 200 to cause the jack 266 to be raised with the positioning member 256 without lessening the spring pressure on the work. The work positioning member 256, the jack 266, and the work move upwardly together until the work contacts with the under surfaces 100 of the throats 28, 32, and 34, after which, the continued movement of the member 256 elevates said member above the surface of the heel seat. The inward movement of the arms 158 and 160 is transmitted to the end

nail inserting units 26 by the strips 252 and posts 154 and 156, and the upward pressure of the work against the inclined surfaces 100 of the throats causes the contour edge of the heel seat end of the outsole to be pressed down firmly on the upper and insole. As clearly appears from Figs. 1, 4, and 6 the clips 142 and 152 are connected to the posts 144, 154, and 156 at points normally spaced from the lower surfaces of the carrier 146 and the arms 158 and 160. Consequently, as the work moves upwardly, the clamping band 140 partakes of such movement. While the above-described operations are being effected, the nail supplying mechanism is operated to deliver nails to the nail receiving passages of the throats, and after the work has been pressed upwardly against the throats, the driver cam arrives at a point in the cycle of its movement which permits the drivers to be forced down to drive the nails into the work. The further rotation of the cam shaft releases the end of the clamping band 140 on the work and lowers the jack, at the same time moving it outwardly from the machine to facilitate the removal of the finished work and the substitution of other work therefor. The work positioning member 256 is also lowered to a position properly to locate the fresh piece of work relatively to the clamping band, after which the machine again comes to rest.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described, the combination of separate fastening inserting mechanisms, work supporting means operable to press the heel seat portion of the sole of a shoe into engagement with said mechanisms in one position of the shoe, and means for operating said mechanisms to attach the heel seat portion of the sole to the shoe.

2. In a machine of the class described, the combination of a plurality of fastening inserting mechanisms constructed to conform the heel seat portion of the sole of a shoe to the edge of the upper and insole of the shoe and relatively movable to position the fastenings, and means for operating said mechanisms to attach the heel seat portion of the sole to the shoe.

3. In a machine of the class described, means for attaching the heel seat portion of a sole to a shoe constructed to conform the marginal edge of the heel seat to the edge of the upper and insole, said means comprising a plurality of fastening inserting mechanisms relatively movable to vary the fastening locations.

4. In a machine of the class described, means for attaching the heel seat portion of a sole to a shoe comprising separate fas-

tening inserting mechanisms, each including a throat constructed and arranged for engagement with the heel seat and means for driving fastenings through said throats.

5. In a machine of the class described, means for attaching the heel seat portion of a sole to a shoe comprising a plurality of fastening inserting mechanisms disposed correspondingly to the contour of the heel end of a shoe and relatively movable to conform to different shoe contours, and means for supporting a shoe for operation thereon by said mechanisms.

6. In a machine of the class described, the combination of separate fastening inserting mechanisms disposed correspondingly to the contour of the heel end of a shoe and having surfaces inclined outwardly and downwardly from the their respective points of fastening insertion, means for pressing the heel seat portion of the sole of the shoe into engagement with said surfaces, and means for operating said mechanisms to attach the heel seat portion of the sole to the shoe.

7. In a machine of the class described, the combination of a plurality of fastening inserting mechanisms disposed correspondingly to the contour of the heel end of a shoe, means for relatively positioning said mechanisms in accordance with variations in the dimensions of the shoes being operated upon, means for pressing the heel seat portion of the sole of a shoe into engagement with said mechanisms, and means for operating said mechanisms to attach the heel seat portion of the sole to the shoe.

8. In a machine of the class described, the combination of fastening inserting means comprising a plurality of fastening receiving throats disposed correspondingly to the contour of the heel end of a shoe, and relatively movable in accordance with variations in the dimensions of shoes, means for presenting the heel seat portion of the sole of a shoe in operative relation to said throats, and means for operating the fastening inserting means to attach the heel seat portion of the sole to the shoe.

9. In a machine of the class described, the combination of fastening inserting means comprising a plurality of fastening receiving throats, means controlled by the shoes being operated upon for positioning the throats relatively to the heel seat portion of the sole of a shoe to cause fastenings to be inserted at substantially uniform distances from the edges of the shoes regardless of variation in the dimensions of the shoes, and means for operating the fastening inserting means to attach the heel seats to the shoe.

10. In a machine of the class described, mechanism for attaching the heel seat portion of a sole to a shoe, comprising a plu-

rality of fastening receiving throats disposed on each side of the heel seat, a member shaped to conform to the heel end of a shoe, and means controlled by said member for determining the relative arrangement of the throats on one side of the shoe.

11. In a machine of the class described, means for attaching the heel seat portion of a sole to a shoe comprising a plurality of fastening inserting mechanisms disposed on each side of the heel seat, a member shaped to conform to the heel end of a shoe, and means movable with each of said mechanisms and co-acting with said member to determine the relative positions of said mechanisms with relation to the heel-seat and to each other.

12. In a machine of the class described, mechanism for attaching the heel seat portion of a sole to a shoe comprising separate fastening inserting instrumentalities constructed and arranged to conform the marginal edge of the heel seat portion of the sole to the rounded edge of the upper and insole, a member shaped to correspond substantially to the contour of the heel end of a shoe, and means controlled by said member for determining the arrangement of the fastening inserting instrumentalities relatively to each other and to the shoe.

13. In a machine of the class described, mechanism for attaching the heel seat portion of a sole to a shoe, comprising a plurality of fastening receiving throats on each side of the shoe, means for clamping the heel end of a shoe, and devices controlled by the clamping means for positioning said throats.

14. In a machine of the class described, the combination of a plurality of fastening inserting mechanisms for each side of the heel end of a shoe, means tending normally to move certain of said mechanisms at each side of the shoe in opposite directions, means for clamping the heel end of the shoe, and means controlled by said clamping means for positioning the fastening inserting mechanisms in different relative positions in accordance with variations in the dimensions of the heel ends of the shoes operated upon.

15. In a machine of the class described, separate fastening inserting mechanisms disposed correspondingly to the contour of the heel end of a shoe and comprising a plurality of throats on the same side of the shoe, means for clamping the heel end of the shoe, and means continuously under control of said clamping means at spaced points along the shoe for determining the arrangement of said throats relatively to the shoe.

16. In a machine of the class described, mechanism for attaching the heel seat portion of a sole to a shoe, comprising separate fastening inserting mechanisms, certain of said mechanisms being arranged in spaced

relation on the same side of the shoe, means for clamping the heel end of the shoe comprising a flexible band, and means co-acting with the clamping means at spaced points along the shoe for positioning the fastening inserting mechanisms in different relative positions in accordance with variations in the dimensions of the heel ends of the shoes operated upon, said positioning means comprising members disposed for engagement with said band.

17. In a machine of the class described, the combination of fastening inserting means, means for clamping the heel end of a shoe mounted for movement with the shoe toward and from the fastening inserting means, and means movable with the clamping means for adjusting the fastening inserting means relatively to the shoe.

18. In a machine of the class described, the combination of fastening inserting means, means for moving a shoe into operative relation to the fastening inserting means, means for clamping the shoe, and means carried by the clamping means for adjusting the fastening inserting means relatively to the shoe.

19. In a machine of the class described, the combination of fastening inserting means, means for positioning a shoe in relation to the fastening inserting means comprising a substantially U-shaped flexible band operable to clamp the heel end of the shoe, an operating member and unyielding connections between said member and the band for forcing the ends of the band against the shoe, and separate yielding means operating on each side of the band adjacent to the bight of the band to press such portions of the band against the shoe.

20. In a machine of the class described, the combination of fastening inserting means, means for positioning a shoe in relation to the fastening inserting means comprising a substantially U-shaped flexible band, supporting means secured to the bight of the band, members carried by the supporting means for engagement with opposite sides of the band, and means individual to said different members for pressing the band yieldingly toward the shoe.

21. In a machine of the class described, the combination of fastening inserting means, means for positioning a shoe in relation to the fastening inserting means comprising a substantially U-shaped flexible band operable to clamp the heel end of the shoe, means for supporting the band, devices comprising arms loosely mounted on the supporting means, and means normally operative to press said devices against the band.

22. In a machine of the class described, the combination of fastening inserting means, means for positioning a shoe in relation

tion to the fastening inserting means comprising a substantially U-shaped flexible band operable to clamp the heel end of the shoe, means for supporting the band, arms loosely mounted on said supporting means, and means carried by the supporting means for pressing the arms yieldingly against the band.

23. In a machine of the class described, the combination of separate fastening inserting mechanisms disposed correspondingly to the contour of the heel end of a shoe and constructed and arranged to conform the marginal edge of the heel seat portion of the outsole to the edge of the upper and insole, means for clamping the heel end of the shoe, means for engaging the heel seat portion of the outsole intermediate between certain of said mechanisms to position the shoe relatively to the clamping means, and means for pressing the shoe into engagement with the fastening inserting mechanisms.

24. In a machine of the class described, the combination of separate fastening inserting mechanisms for attaching the heel seat portion of an outsole to a shoe, means for clamping the heel end of the shoe, means co-operating with the fastening inserting mechanisms for positioning a shoe relatively to the clamping means with the adjacent surface of the outsole spaced from the upper surface of the clamping means, means for raising the positioning means out of engagement with the shoe after it is clamped, means for raising the shoe into operative relation to the fastening inserting mechanisms, and means for operating said mechanisms to attach the heel seat to the shoe.

25. In a machine of the class described, the combination of separate fastening inserting mechanisms for securing the heel seat portion of an outsole to a shoe, means for clamping the shoe, and means for positioning the shoe relatively to the clamping means with the heel seat portion of the outsole spaced from the clamping means by a distance sufficient to permit the contour edge of the sole to be pressed downwardly on the shoe to conform it to the edge of the upper and insole.

26. In a machine of the class described, means for clamping the heel end of a shoe in a location spaced from the outsole, and means for securing the outsole to the shoe constructed and arranged to conform the marginal edge of the heel seat portion of the outsole to the edge of the upper and insole.

27. In a machine of the class described, the combination of independently movable fastening inserting mechanisms arranged to operate in spaced locations at the same side of a shoe, a substantially U-shaped member

for clamping the shoe, and independent means for maintaining the fastening inserting mechanisms constantly under the control of said member.

28. In a machine of the class described, the combination of fastening inserting mechanism, a substantially U-shaped member for clamping a shoe in operative relation to said mechanism, means for normally urging said mechanism away from the shoe, and connections between the clamping means and said mechanism for moving said mechanism toward the shoe.

29. In a machine of the class described, the combination of separate fastening inserting mechanisms disposed correspondingly to the contour of the heel seat portion of the sole of a shoe, a substantially U-shaped member adapted to embrace the heel end of a shoe, connections between said member and certain of said fastening inserting mechanisms for moving the fastening inserting mechanisms into position to insert fastenings in spaced relation to the edge of the heel seat portion of the sole, and means controlled by said member for positioning other of said fastening inserting mechanisms in determinate relation to the edge of the heel seat.

30. In a machine of the class described, the combination of separate fastening inserting mechanisms arranged in a curve corresponding substantially to the contour edge of the heel seat portion of the sole of a shoe, a substantially U-shaped member adapted to embrace the heel end of a shoe, means normally operative to urge certain of said mechanisms away from the shoe, means normally operative to urge certain of said mechanisms toward the shoe, and devices controlled by said member for determining the positions of the several mechanisms with relation to the contour edge of the heel seat.

31. In a machine of the class described, the combination with shoe positioning means, of a plurality of fastening inserting mechanisms for inserting fastenings to secure the outsole to other parts of the shoe, said mechanisms being relatively movable to position the fastenings, and means for effecting relative movement between the shoe and said fastening inserting mechanisms to apply conforming pressure to the outsole by engagement with said mechanisms.

32. In a machine of the class described, the combination with means for supporting a last and shoe materials including an outsole, of means for applying conforming pressure to the outsole over the bottom of the last and for fastening the outsole to other parts of the shoe comprising a plurality of fastening inserting mechanisms

arranged for driving fastenings along the margin of the outsole, said mechanisms being relatively movable to position the fastenings.

33. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of a plurality of fastening inserting mechanisms mounted to close inwardly along the plane of the outsole into positions for inserting fastenings along the margin of the heel seat end of the outsole, and means for applying conforming pressure to the margin of the outsole preparatory to the insertion of the fastenings.

34. In a machine of the class described, the combination with means for supporting a last and shoe materials including an outsole, of a plurality of fastening inserting mechanisms arranged for inserting fastenings along the margin of the heel seat end of the outsole and relatively movable to position the fastenings, each of said fastening inserting mechanisms having means thereon for engaging the margin of the outsole and applying thereto conforming pressure over the heel seat face of the last, and means for effecting relative movement between said mechanisms and the shoe in the direction of the height of the shoe for subjecting the sole to such pressure.

35. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of a plurality of fastening inserting mechanisms arranged for inserting fastenings along the margin of the heel seat end of the outsole and relatively movable to position the fastenings, each of said fastening inserting mechanisms having means thereon which is unyielding with respect to movement heightwise of the shoe and arranged to apply conforming pressure to the margin of the outsole.

36. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of a plurality of fastening inserting mechanisms for inserting fastenings to secure the outsole to other parts of the shoe, and means enabling the operator to adjust different fastening inserting mechanisms independently to vary the location of fastenings.

37. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of a plurality of fastening inserting mechanisms arranged for inserting fastenings along the margin of the heel seat end of the outsole to secure the outsole to other parts of the shoe, and means controlled by each shoe for determining the relative locations of the fastening inserting mechanisms for that shoe.

38. In a machine of the class described, the combination with means for supporting

a shoe including an outsole, of a plurality of fastening inserting mechanisms arranged for inserting fastenings along the margin of the heel seat end of the outsole to secure the outsole to other parts of the shoe, and means controlled by each shoe for determining the relative locations of the fastening inserting mechanisms for that shoe, different fastening inserting mechanisms being also adjustable to vary the locations of the fastenings.

39. In a machine of the class described, the combination with means for inserting fastenings round the heel seat end of an outsole to secure the outsole to other parts of a shoe, of means for clamping the shoe at its heel end to position it for the outsole fastening operation, and means for moving the shoe and said clamping means together toward the fastening means to apply conforming pressure to the outsole.

40. In a machine of the class described, the combination with a plurality of fastening inserting mechanisms for inserting fastenings along the margin of the heel seat end of an outsole, each of said mechanisms having means thereon for applying conforming pressure to the margin of the outsole, of a band for embracing the heel end of the shoe, said band being movable heightwise of the shoe, and means for moving the shoe and said band together in such direction to force the outsole against said conforming means.

41. In a machine of the class described, the combination of means for positioning a shoe including an outsole, comprising a band constructed to embrace the heel end of the shoe in a location spaced from the outsole, and means for operating upon the shoe as thus positioned to apply conforming pressure to the outsole and to fasten the outsole to other parts of the shoe.

42. In a machine of the class described, the combination with means for inserting fastenings to secure the heel end of an outsole to other parts of a shoe, of a member for engaging the heel seat face of the outsole to position the shoe when the shoe is presented to the machine, and a band arranged to close about the heel end of the shoe in a location spaced from the outsole as thus positioned to assist in positioning the shoe relatively to the fastening inserting means.

43. In a machine of the class described, the combination with a plurality of fastening inserting mechanisms arranged for inserting fastenings along the margin of the heel end of an outsole to secure the outsole to other parts of a shoe, of a member for engaging the intermediate portion of the heel seat face of the outsole to position the shoe when the shoe is presented to the ma-

chine, and means for moving said member and the shoe in a direction to engage the margin of the outsole with said fastening inserting mechanisms for applying conforming pressure to said margin.

44. In a machine of the class described, the combination with a member movable into position to apply clamping pressure on the lateral periphery of a shoe, of fastening inserting mechanism supported independently of said member for positioning movement relatively to the shoe, and mechanism movable with and controlled by said clamping member for moving said fastening inserting mechanism with said member to an operative position determined by said member.

45. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of fastening inserting mechanism supported independently of said band for positioning movement relatively to the shoe, and means for controlling the positioning movement of said mechanism by the closing of the band.

46. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of fastening inserting mechanism supported independently of said band for movement inwardly into position for inserting one or more fastenings in the bottom of the shoe, and a connection between said fastening inserting mechanism and the band for moving said mechanism inwardly as the band closes about the shoe.

47. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of fastening inserting mechanism movable into and out of position for inserting one or more fastenings in the bottom of the shoe, spring means for forcing said mechanism outwardly from operative position, and a connection for moving said mechanism inwardly by the closing movement of the band.

48. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of fastening inserting mechanism supported independently of said band for positioning movement relatively to the shoe, and a device operative in all positions of the band for determining the position of said mechanism by the position of the band.

49. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of fastening inserting mechanism movable into and out of position for inserting one or more fastenings in the bottom of the shoe, spring means for forcing said mechanism inwardly toward operative position, and a stop member connected to said mechanism and constantly under control of the band for de-

termining the position to which said mechanism is moved by said spring means.

50. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of a plurality of fastening inserting mechanisms supported independently of said band for movements inwardly into position for inserting fastenings along the margin of the shoe bottom at the opposite sides of the shoe, and controlling means to cause said mechanisms to move inwardly into fastening inserting position as the band is closed about the shoe.

51. In a machine of the class described, the combination with a band arranged to close about the end of a shoe, of a plurality of fastening inserting mechanisms supported independently of said band for movements inwardly into position for inserting fastenings along the margin of the shoe bottom at the opposite sides of the shoe, and devices automatically operative in the closing of the band to position said mechanisms in a relation to the shoe determined by the band.

52. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of a plurality of devices for driving fastenings along the margin of the heel seat end of the outsole to fasten the outsole to other parts of the shoe, means for automatically positioning said devices in accordance with the shape and size of the shoe for driving the fastenings at predetermined distances from the edge of the outsole, and means for applying conforming pressure to the heel seat end of the outsole prior to the driving of the fastenings.

53. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of a plurality of devices for driving fastenings along the margin of the heel seat end of the outsole to fasten the outsole to other parts of the shoe, a member for embracing the heel end of the shoe, means controlled by said member for determining the relative positions of said devices in accordance with the shape and size of the shoe, and means for applying conforming pressure to the heel seat end of the outsole prior to the driving of the fastenings.

54. In a machine of the class described, the combination with means for supporting a shoe including an outsole, of means for driving fastenings to secure the heel seat end of the outsole to other parts of the shoe, and means for applying conforming pressure to the heel seat end of the outsole, said conforming means being adjustable for different shapes and sizes of shoes.

55. In a machine of the class described, the combination with means for supporting

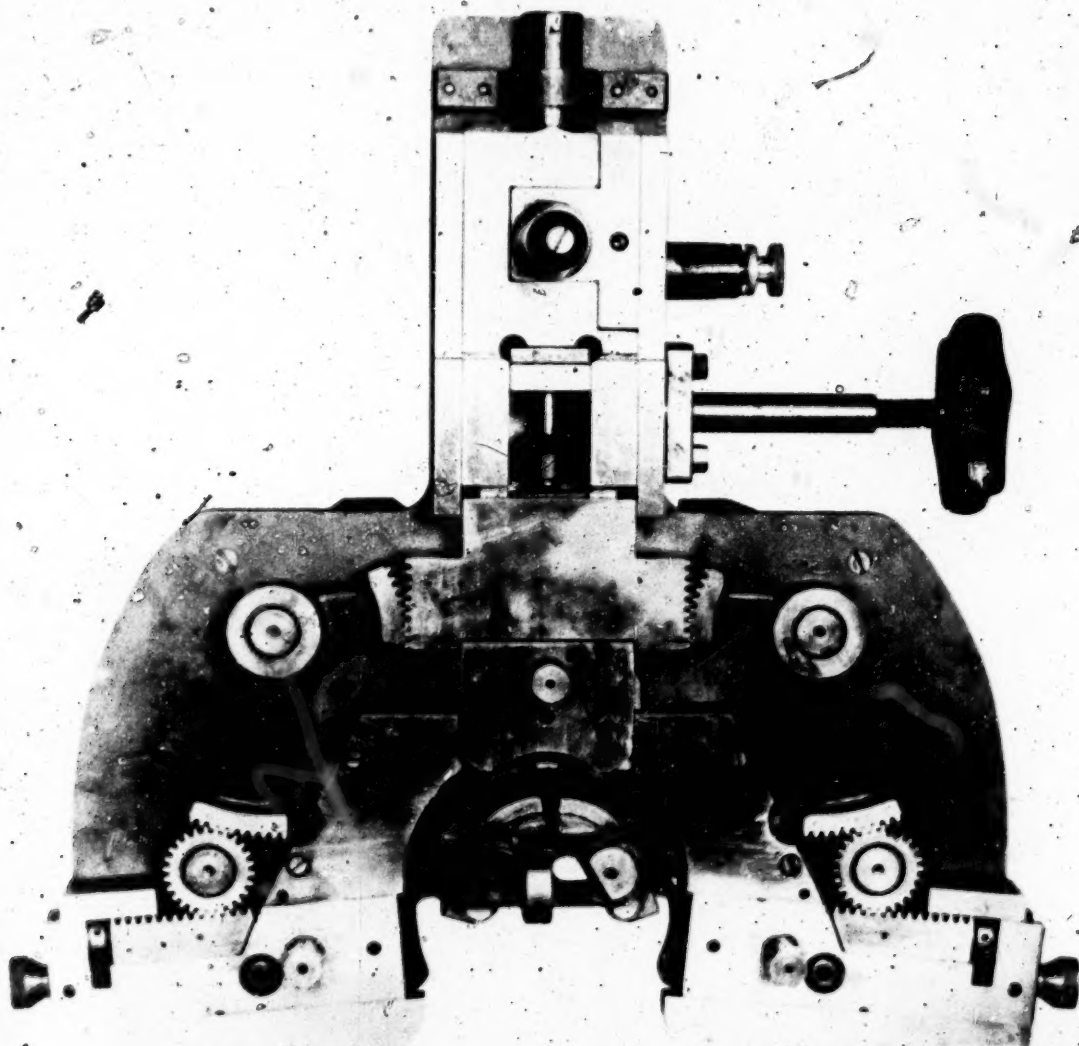
a shoe including an outsole, of a plurality of devices for driving fastenings to secure the heel seat end of the outsole to other parts of the shoe, means for applying conforming pressure along the margin of the heel seat end of the outsole preparatory to the driving of the fastenings, and automatic means for adjusting said driving devices and said conforming means in accordance with the shape and size of the shoe.

56. In a machine of the class described,

the combination with fastening inserting means, of means for clamping the heel end of a shoe in position for the operation of said fastening inserting means, and mechanism movable with and controlled by said clamping means to position said fastening inserting means in operative relation to the shoe.

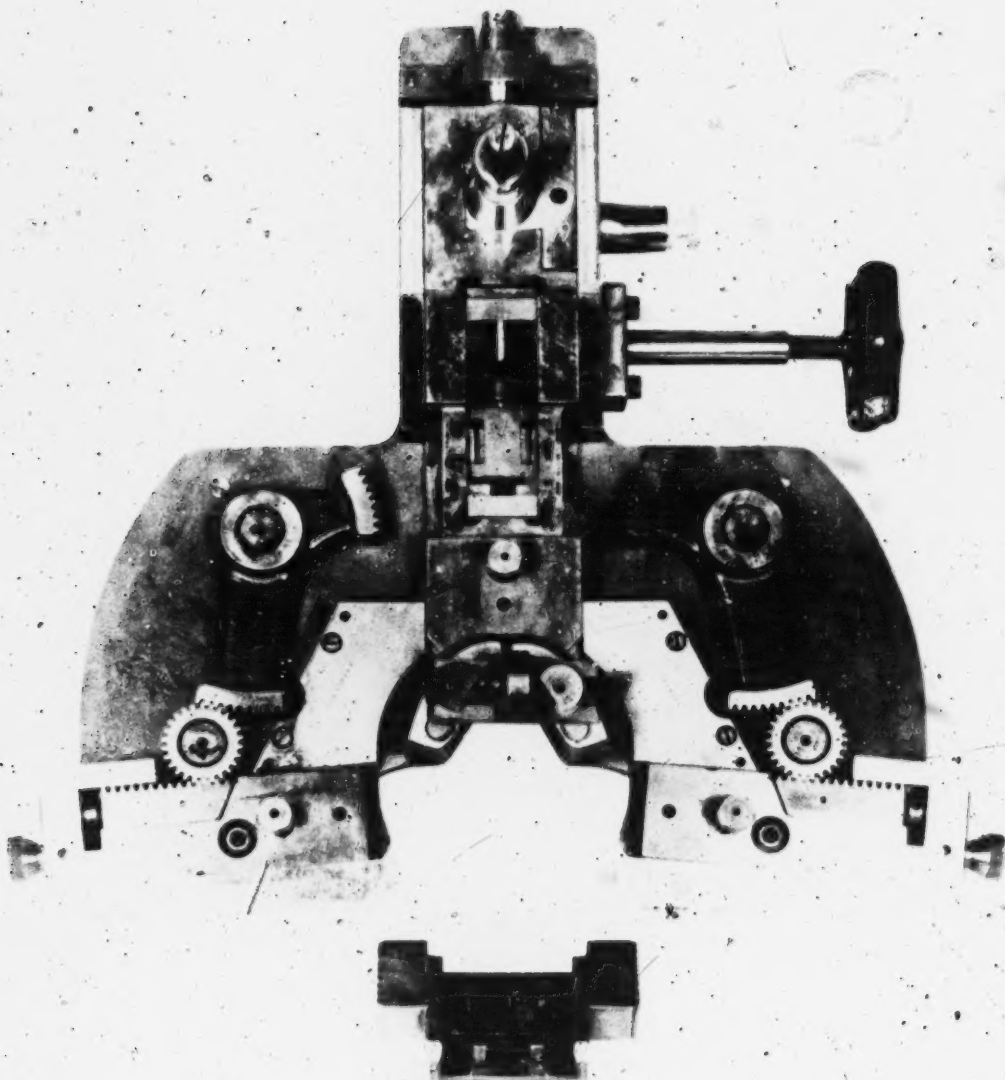
In testimony whereof I have signed my name to this specification.

CHARLES H. HOYT.

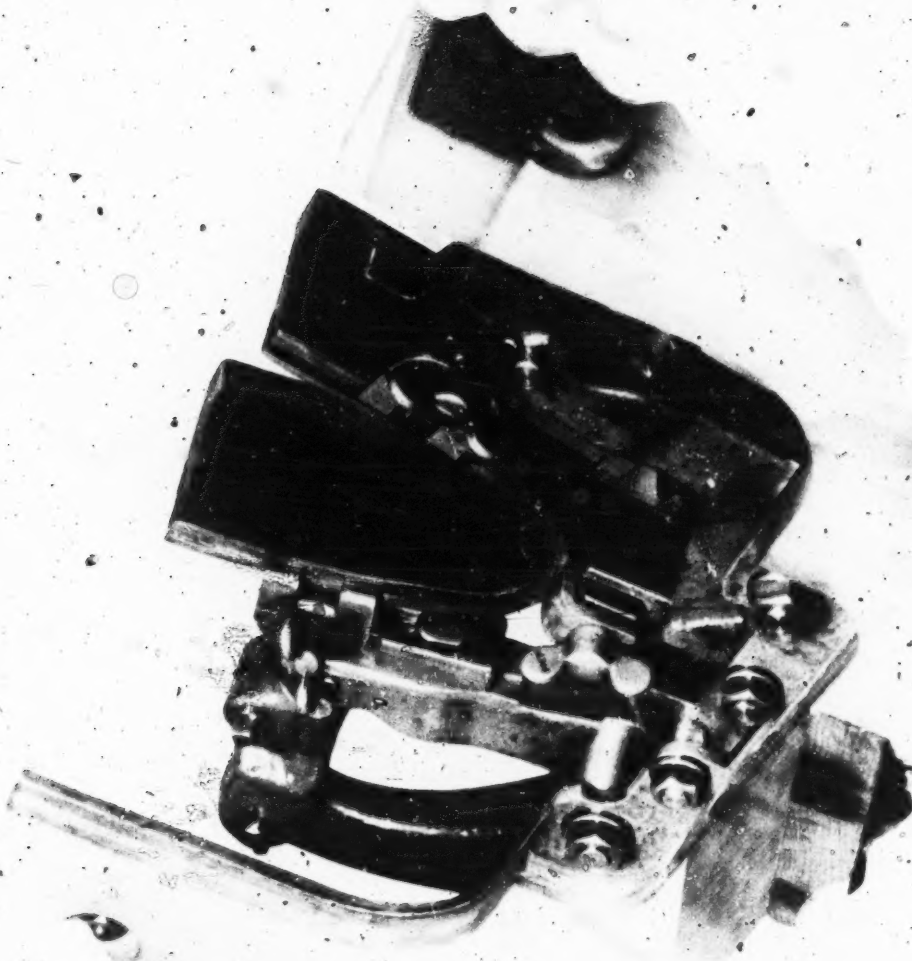


23-A

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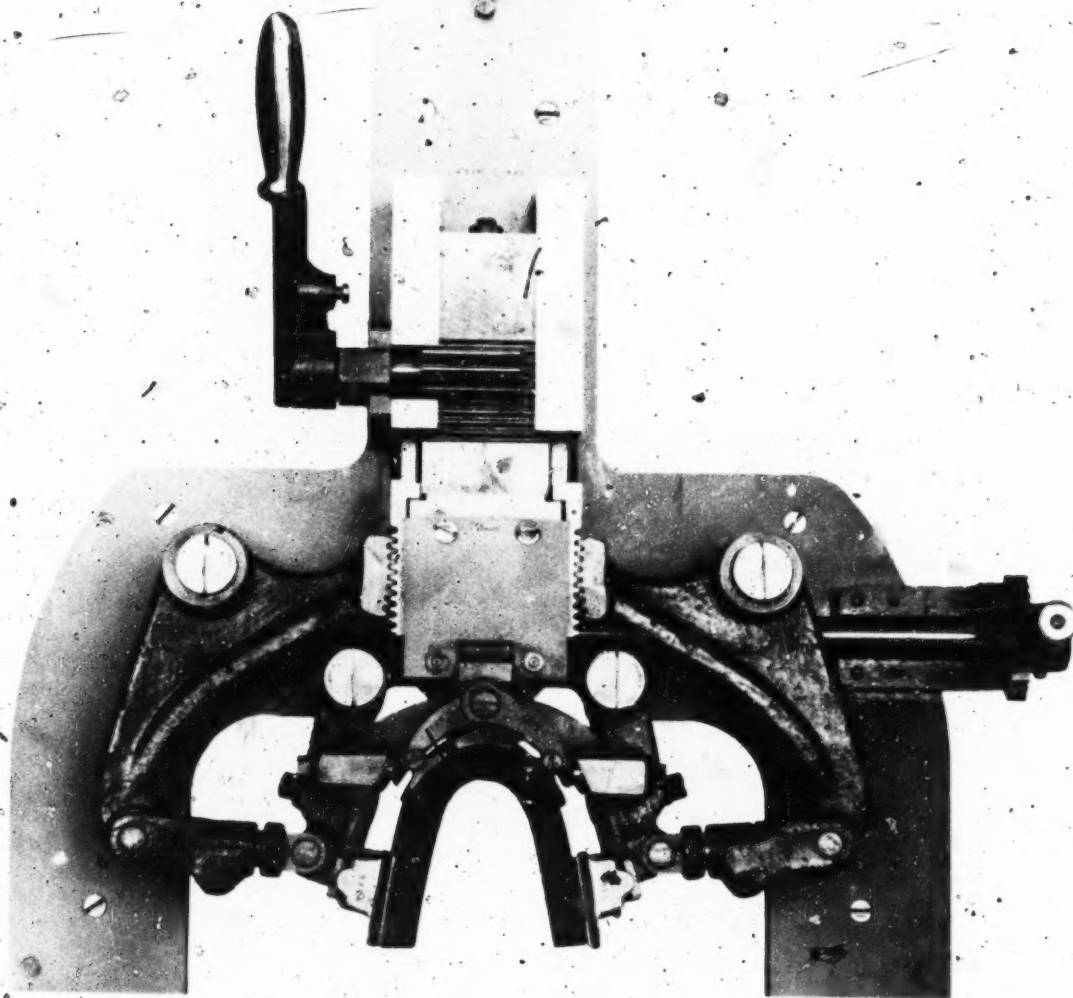


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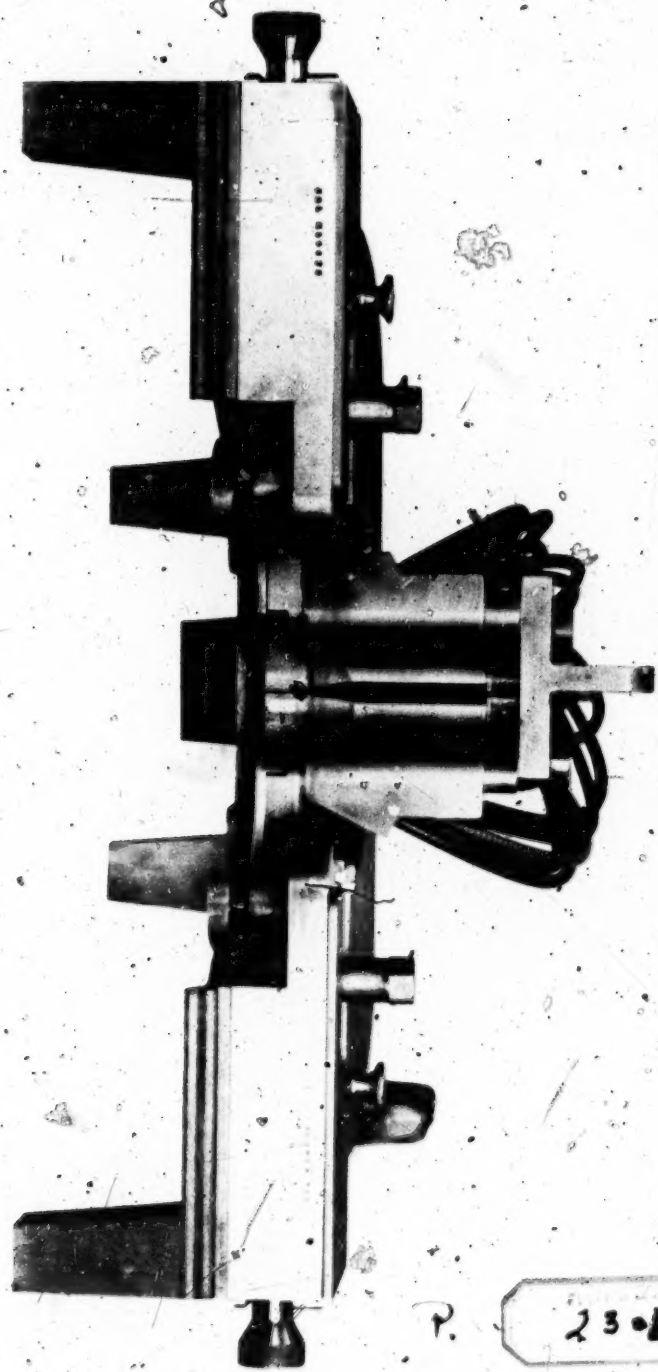


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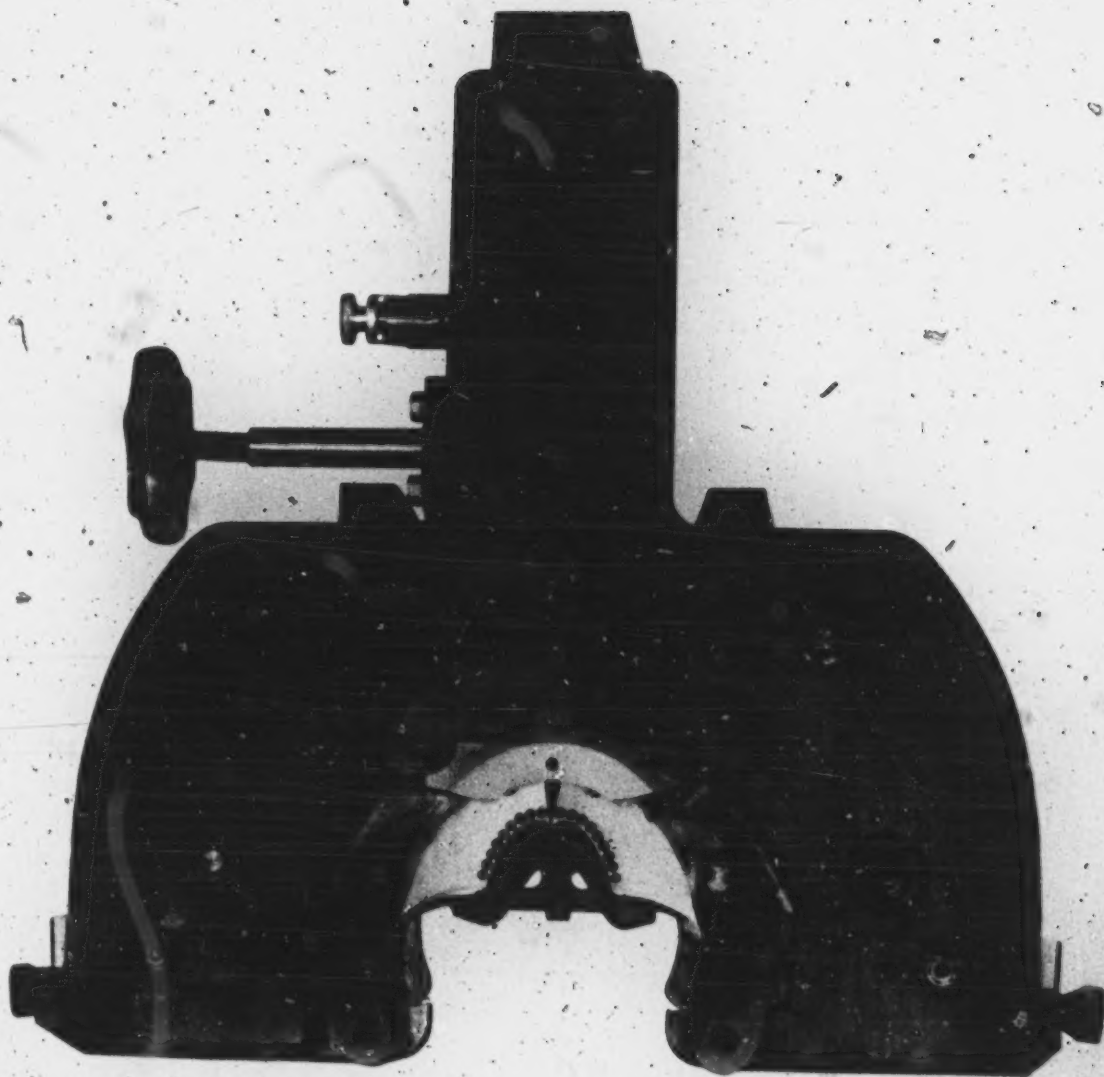
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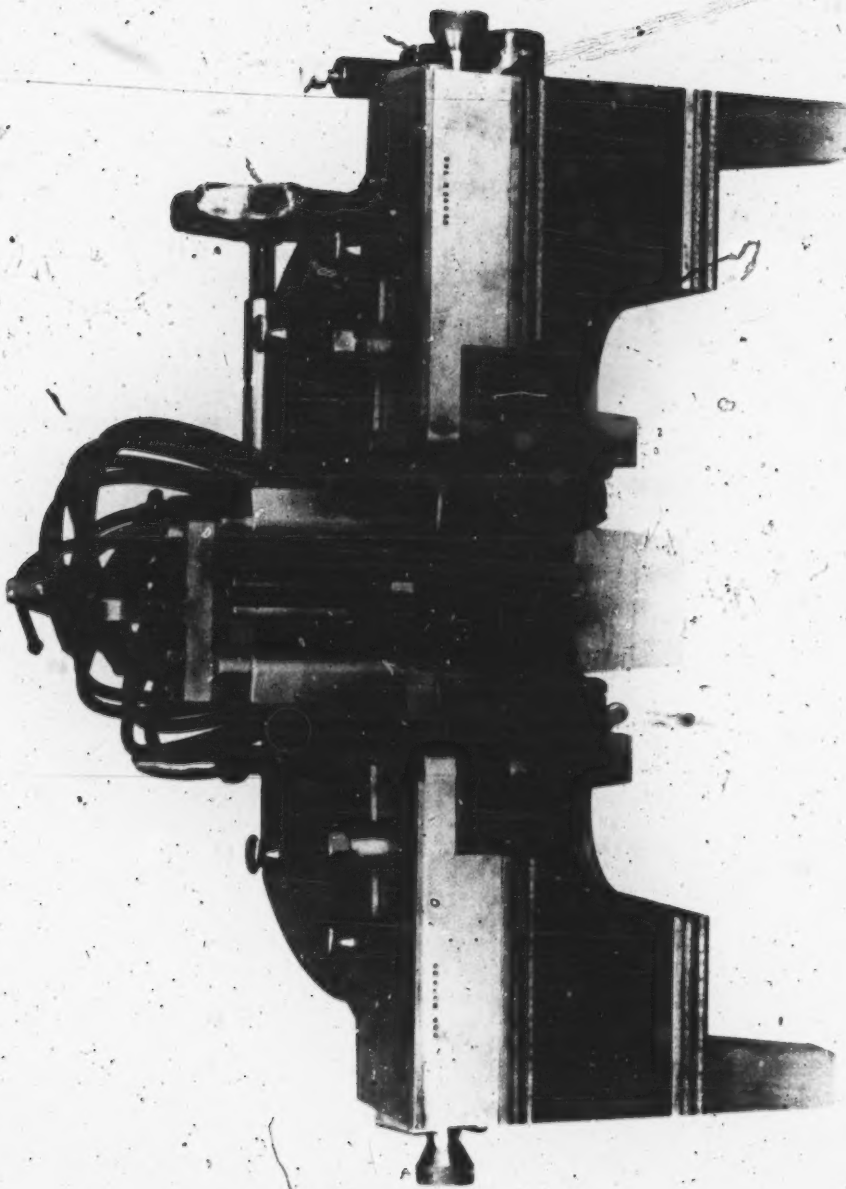
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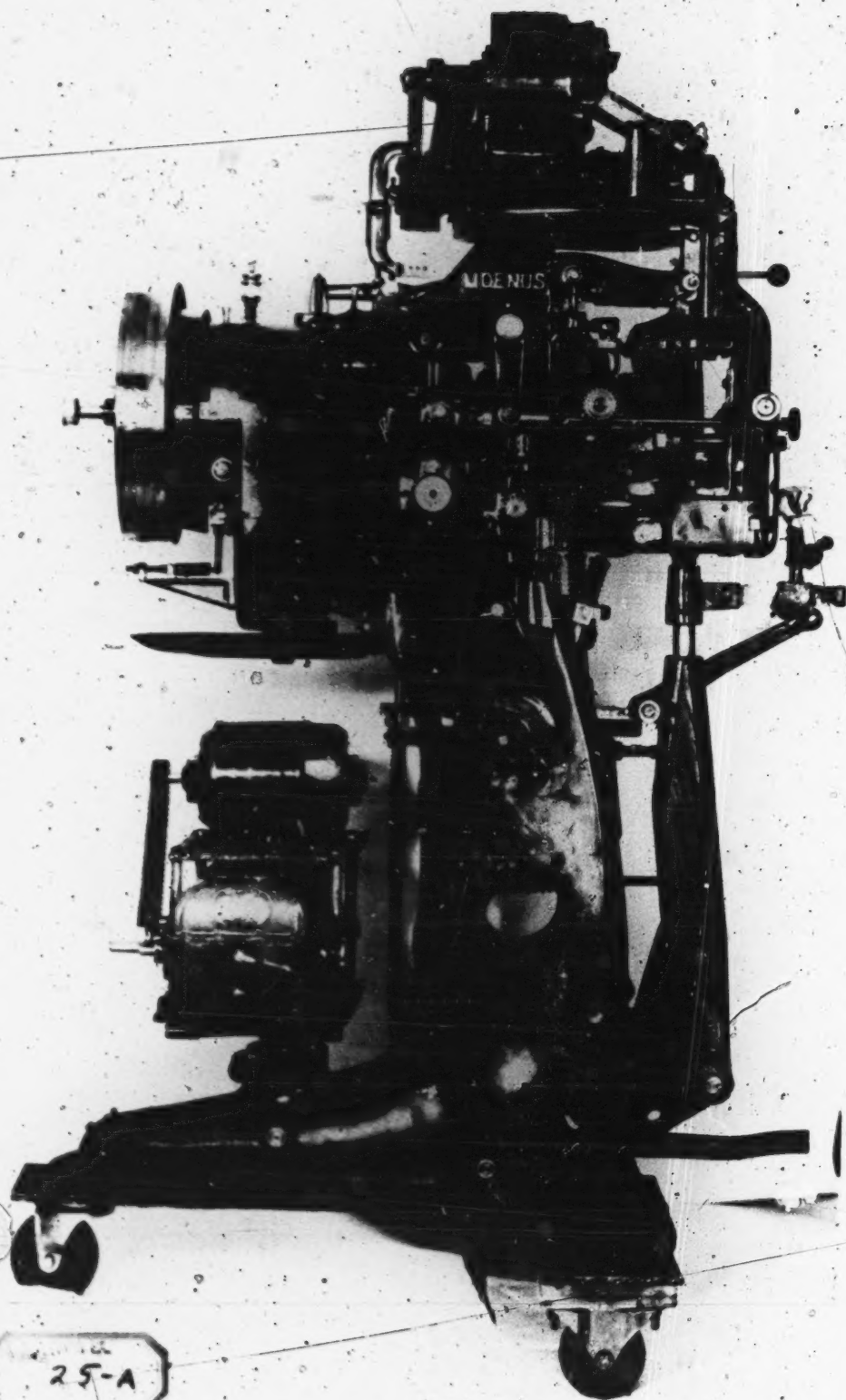
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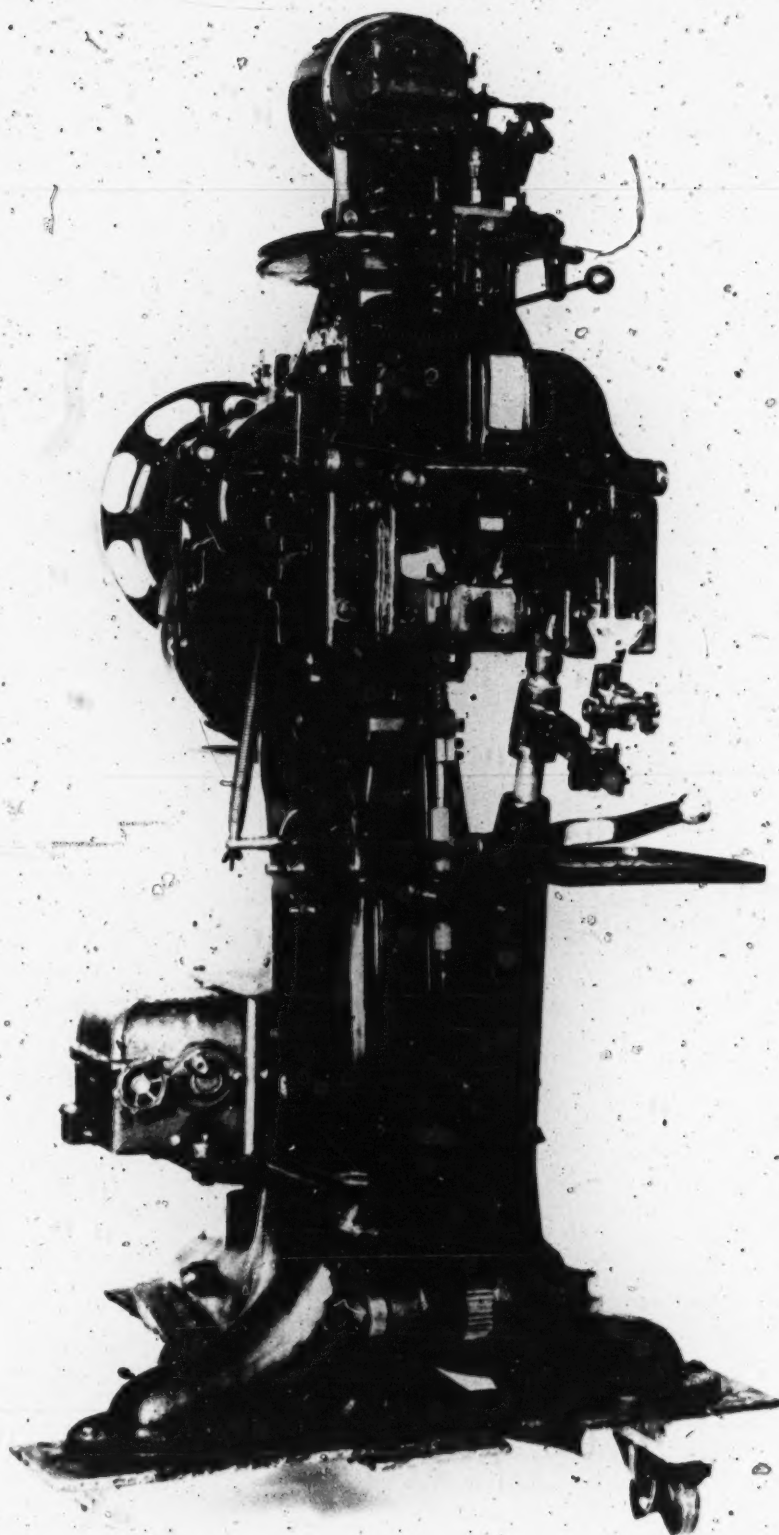
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23-F

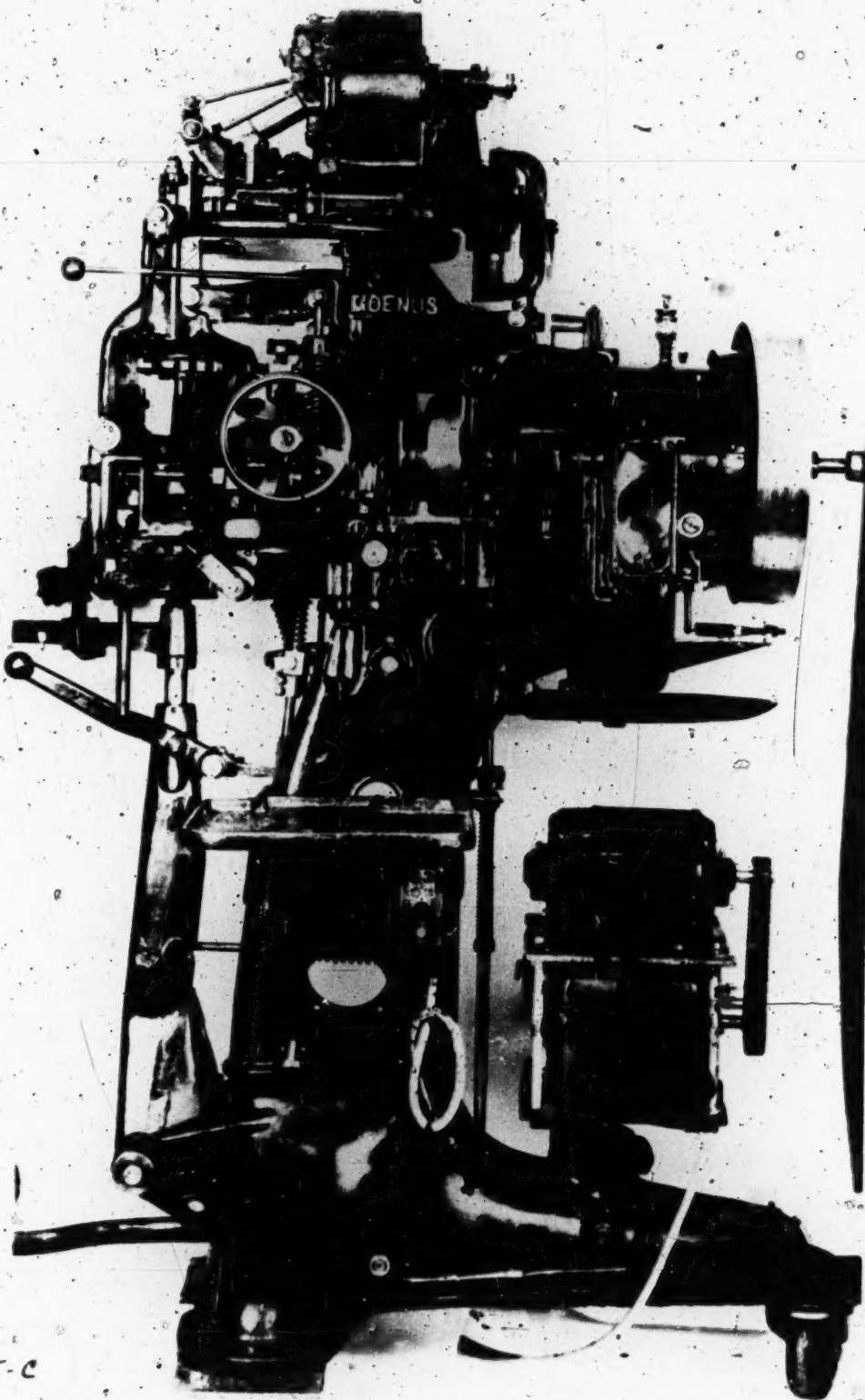


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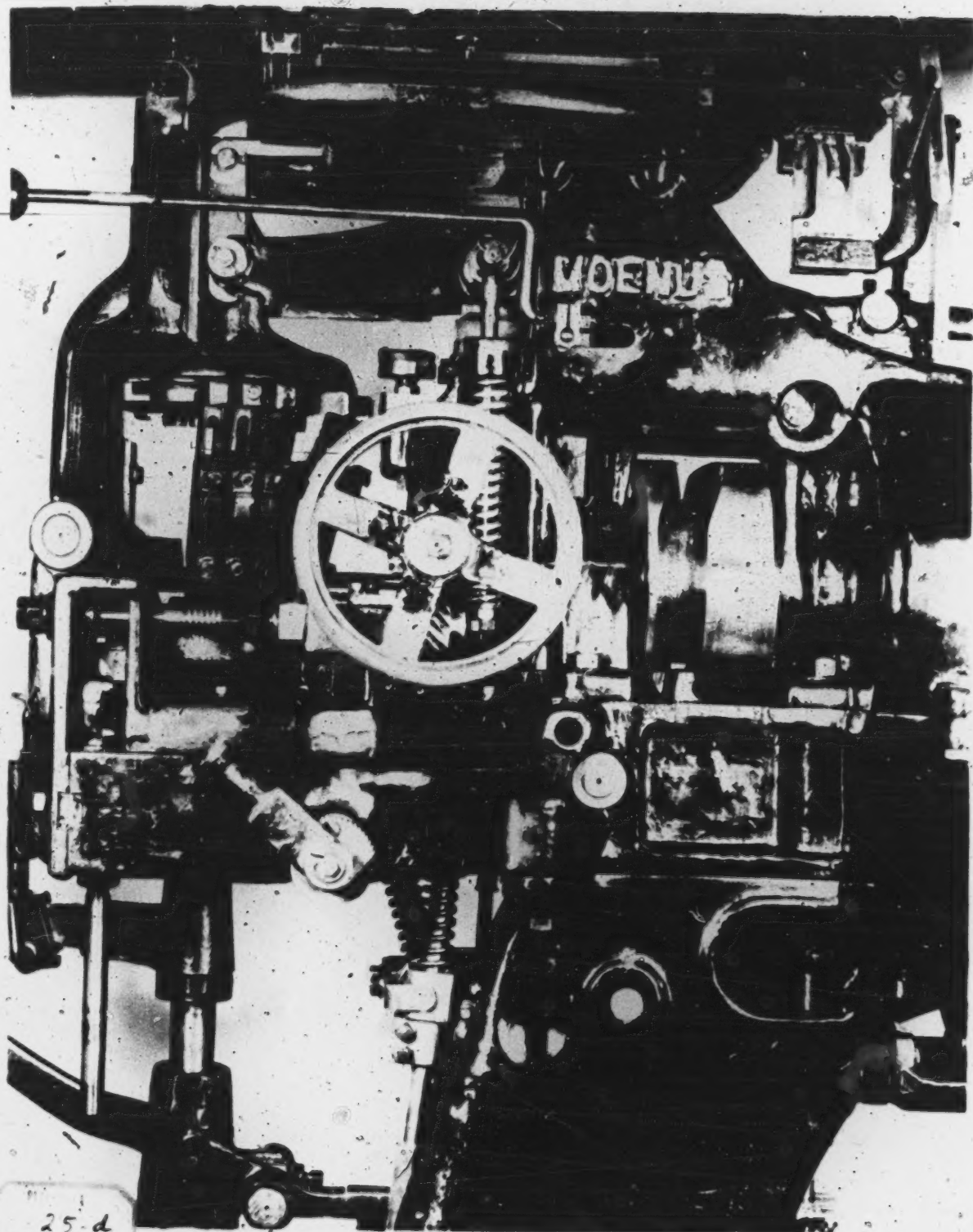


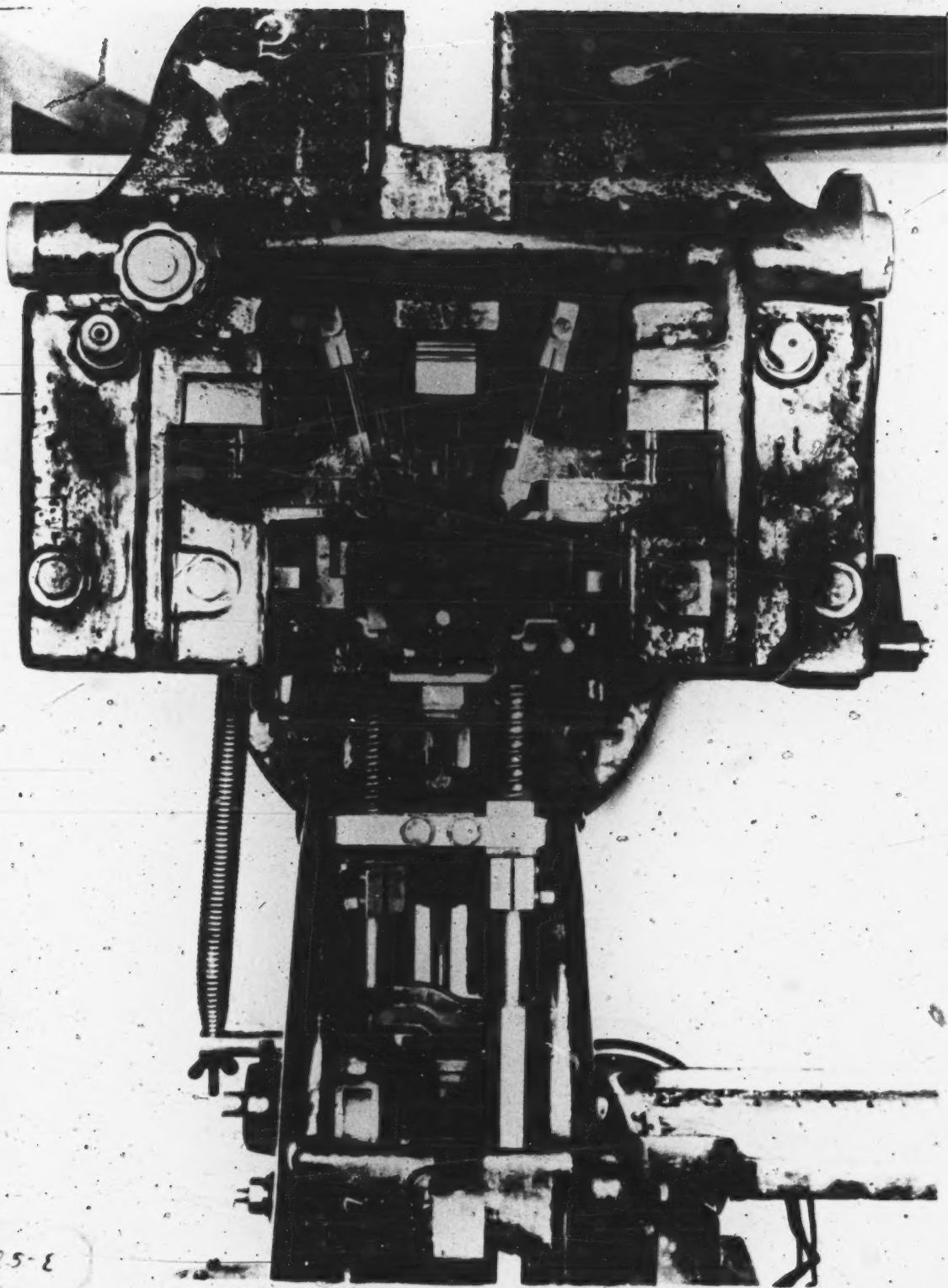


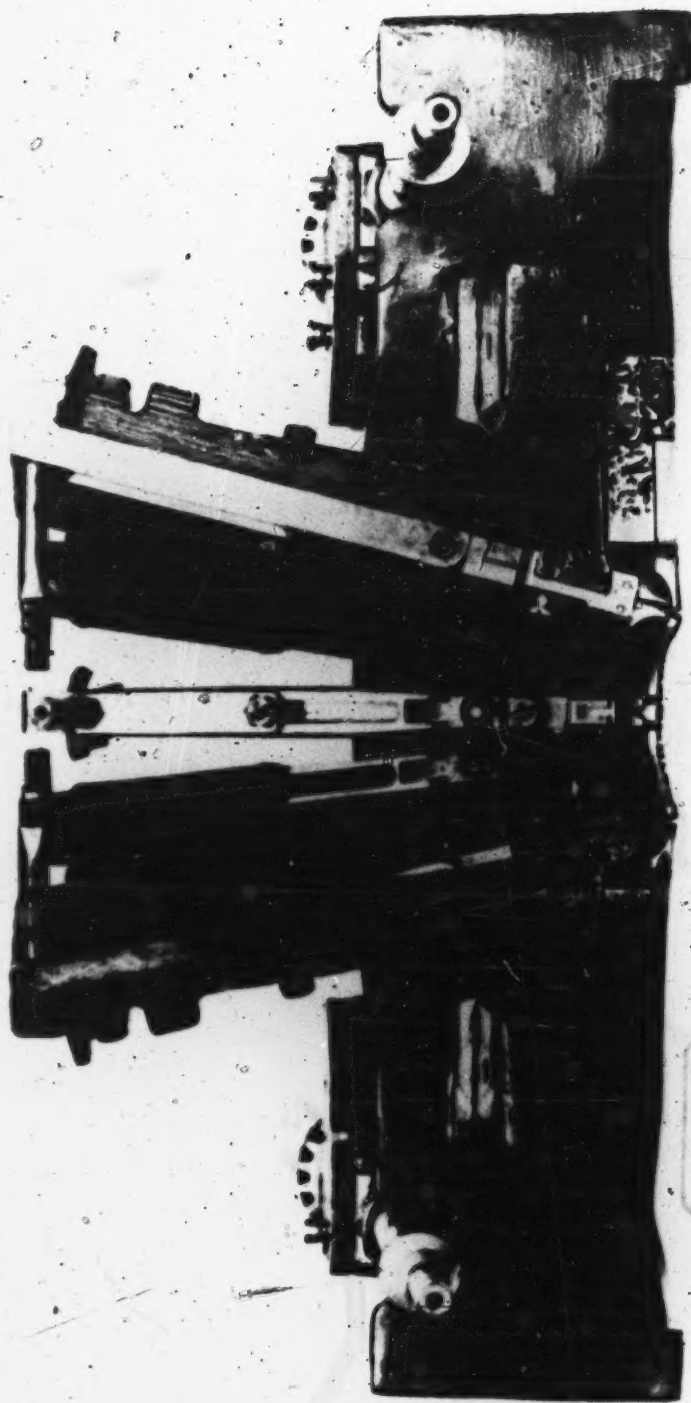
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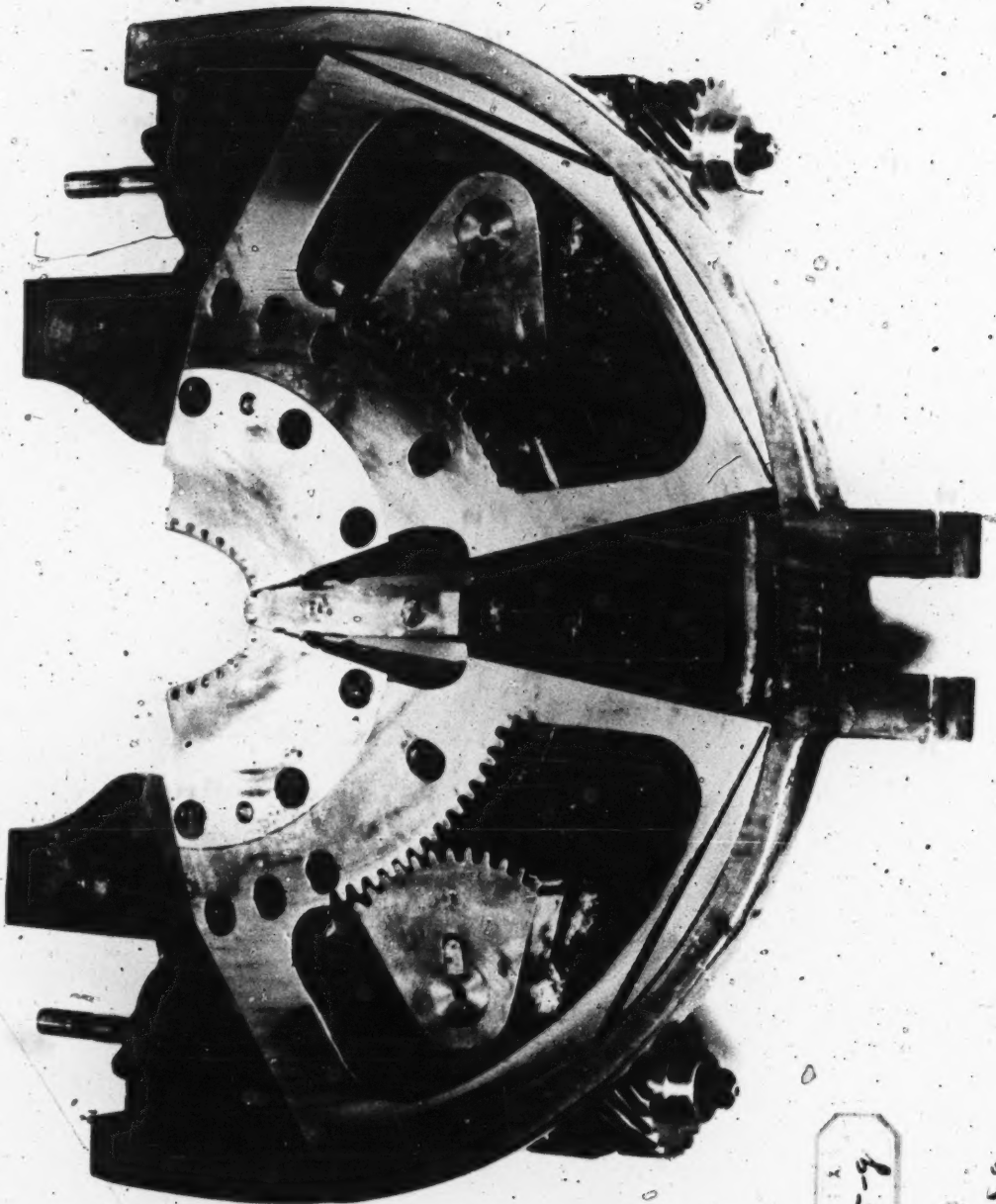
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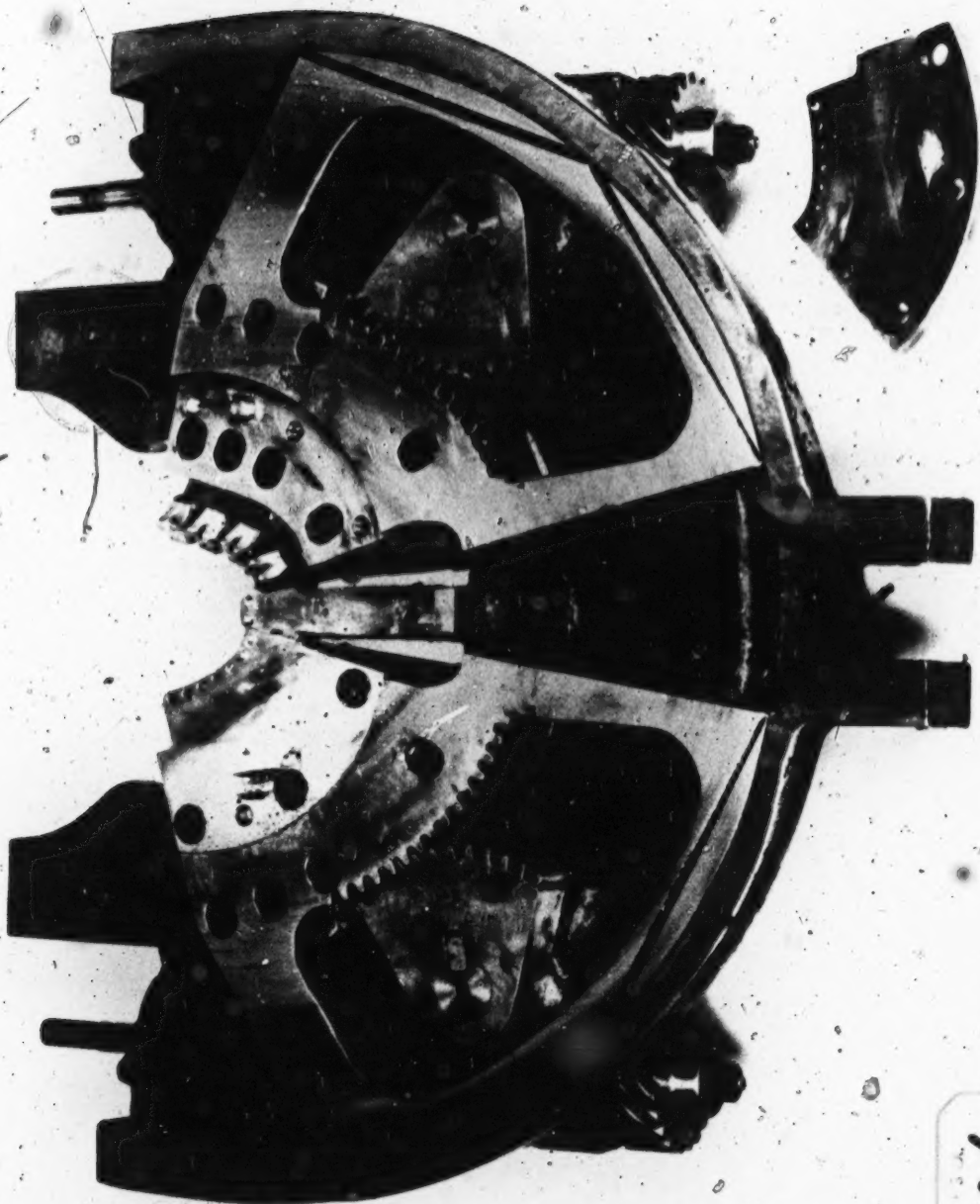


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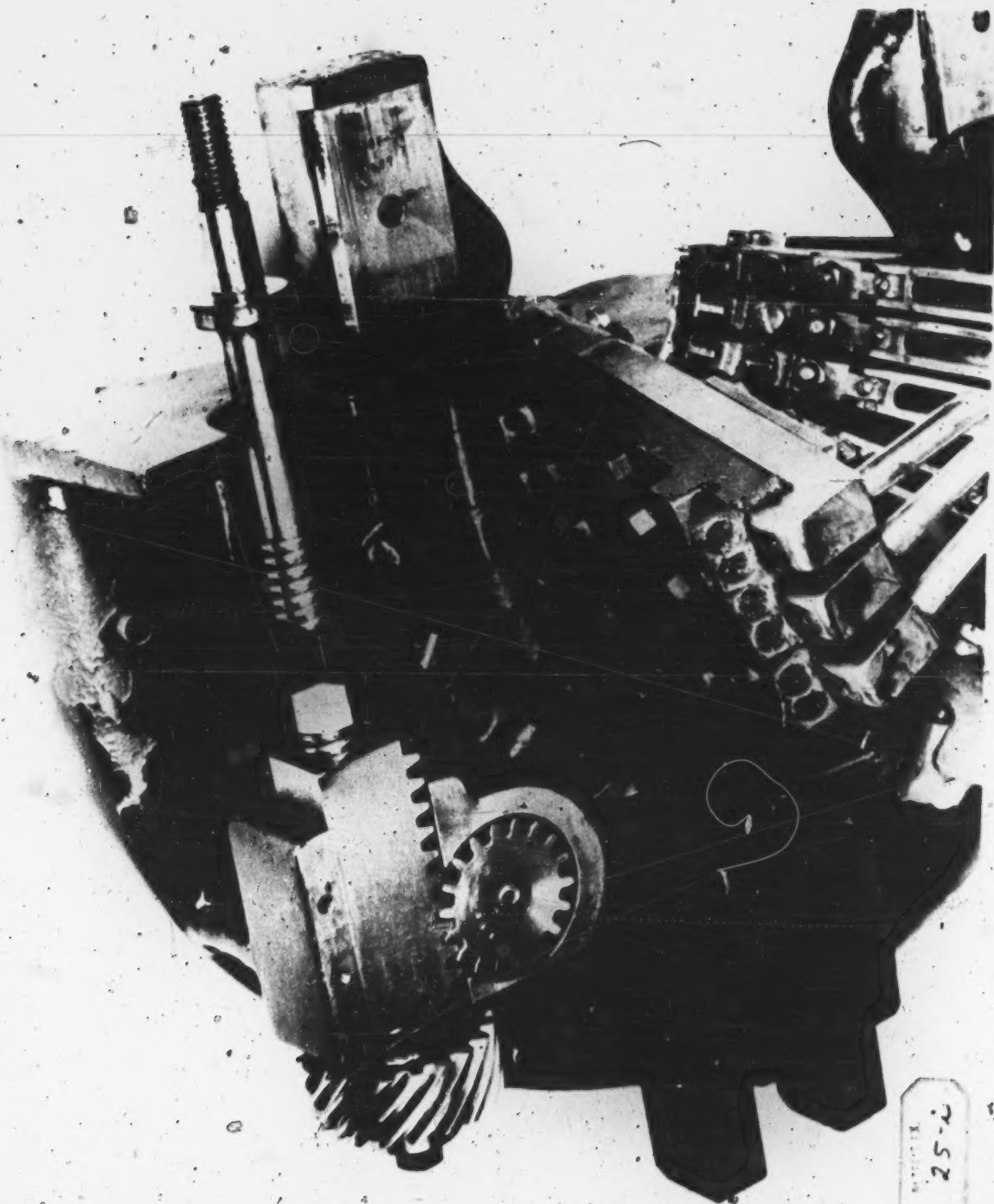
PIT X
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EX 259

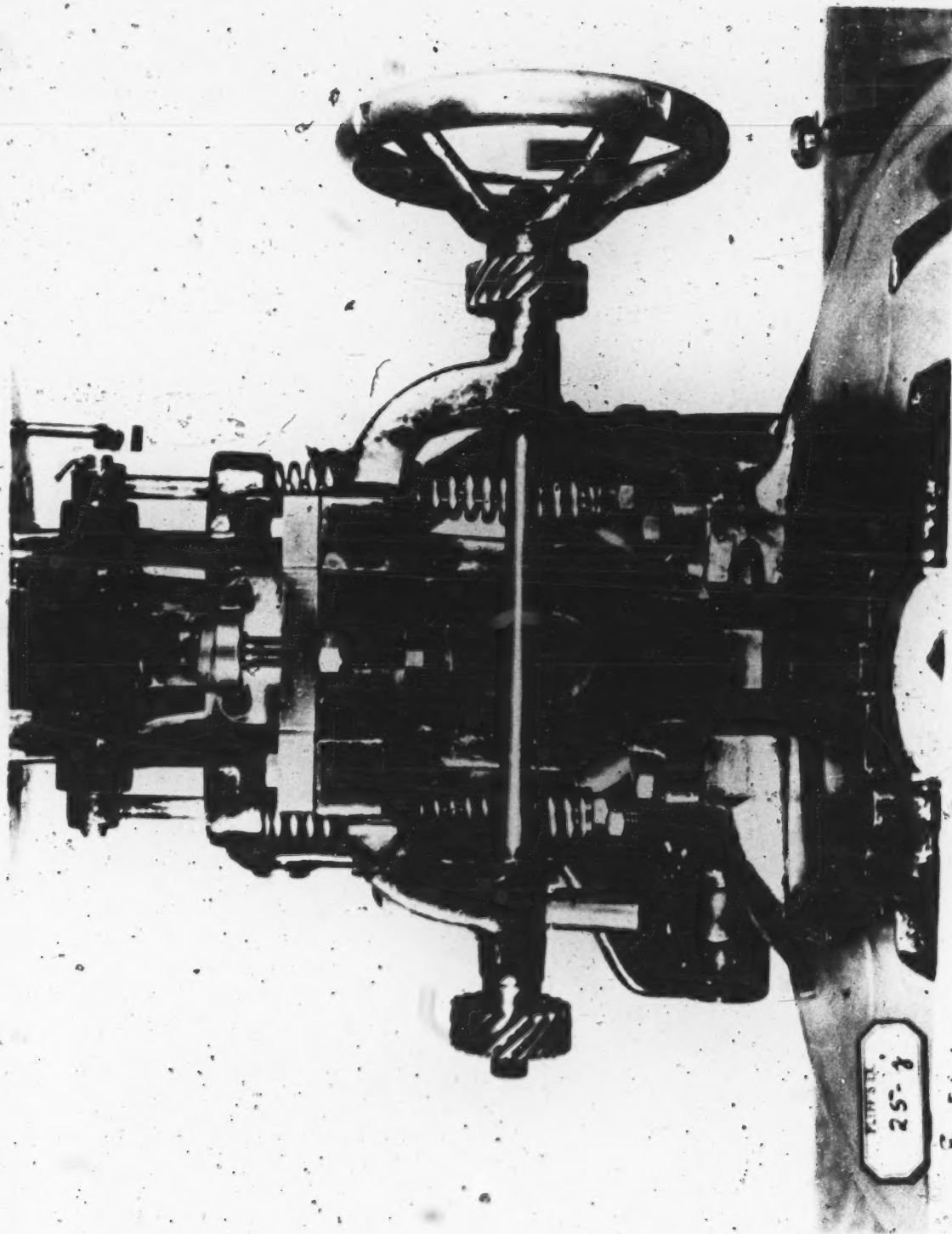


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76

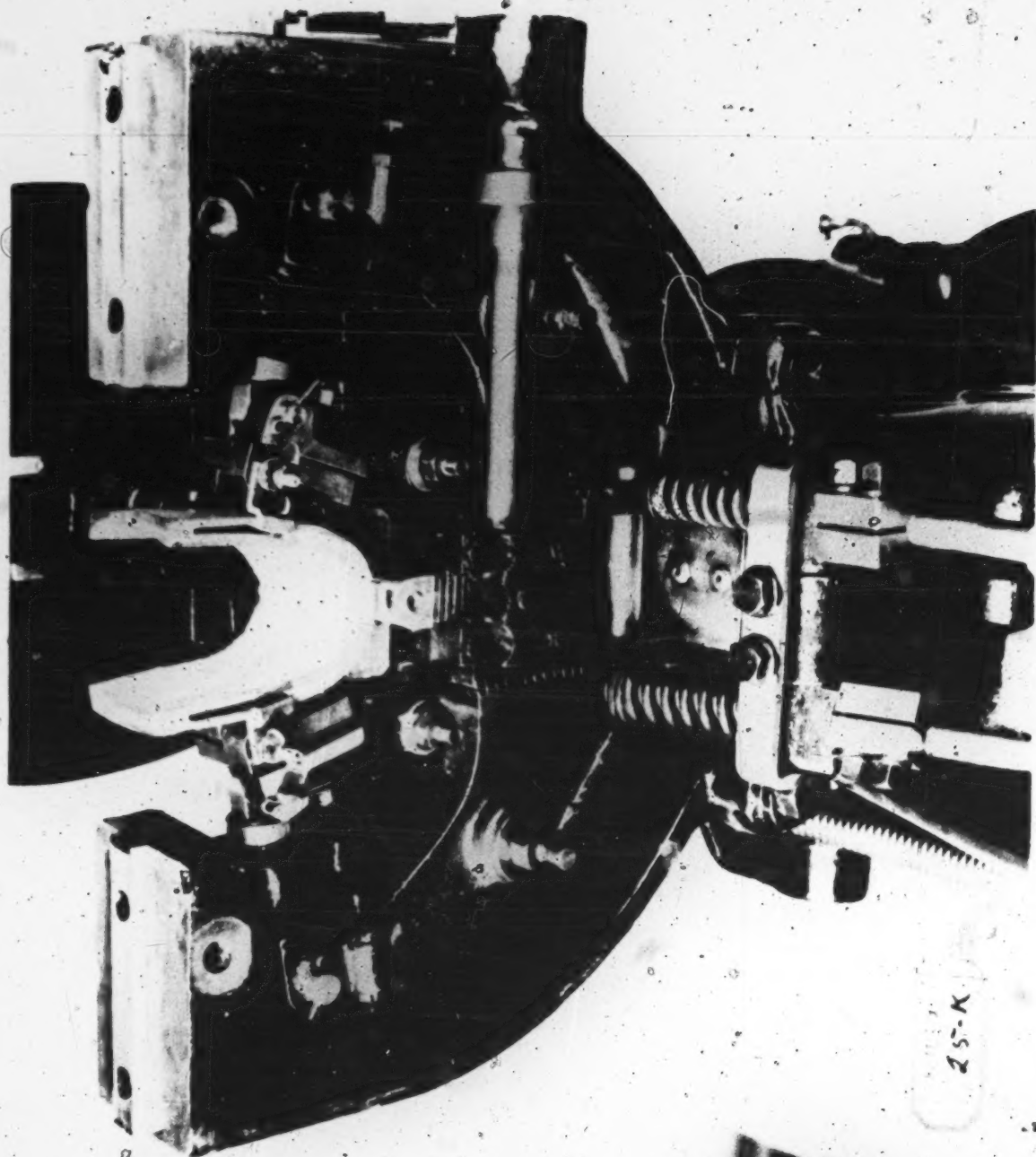


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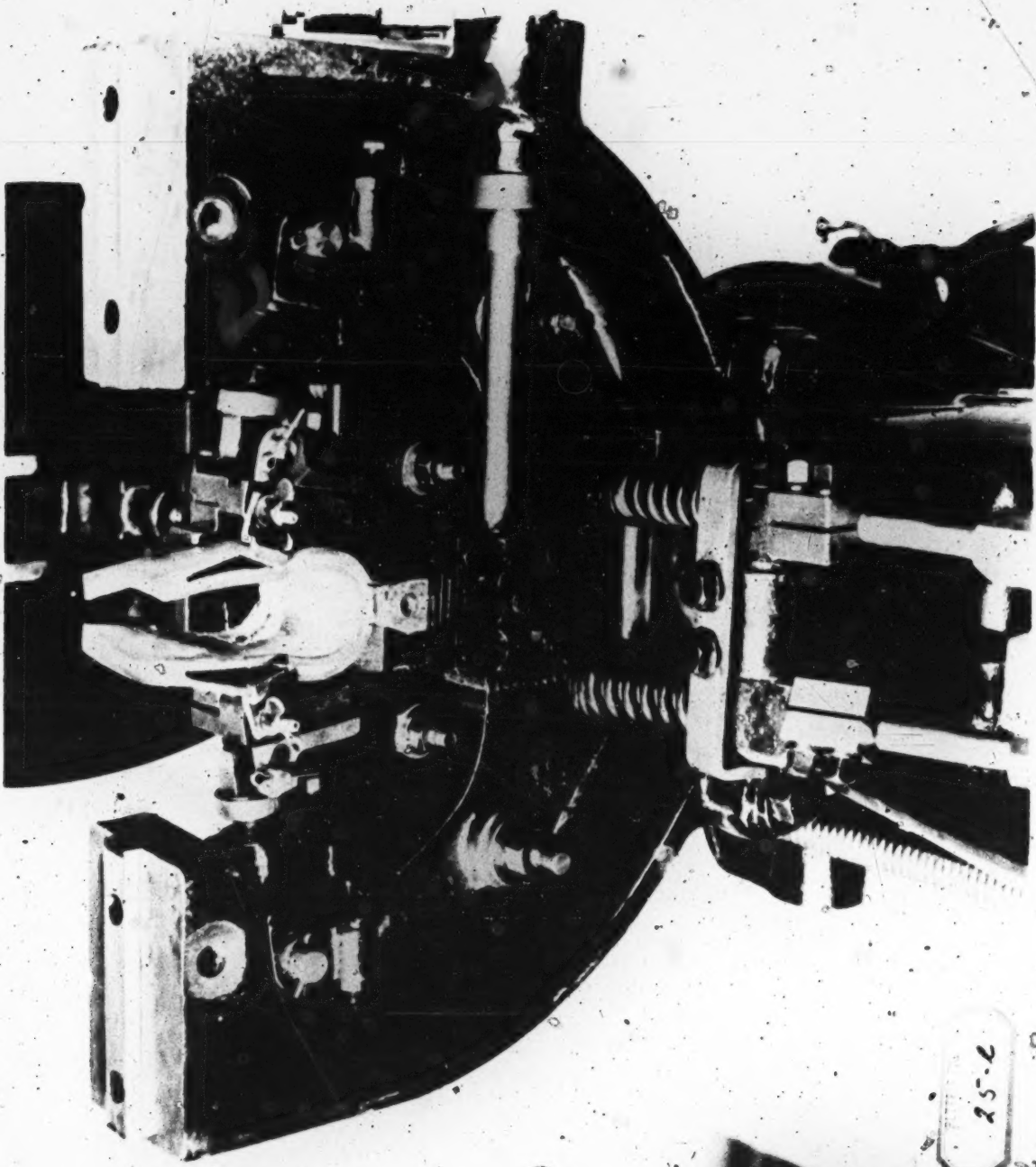


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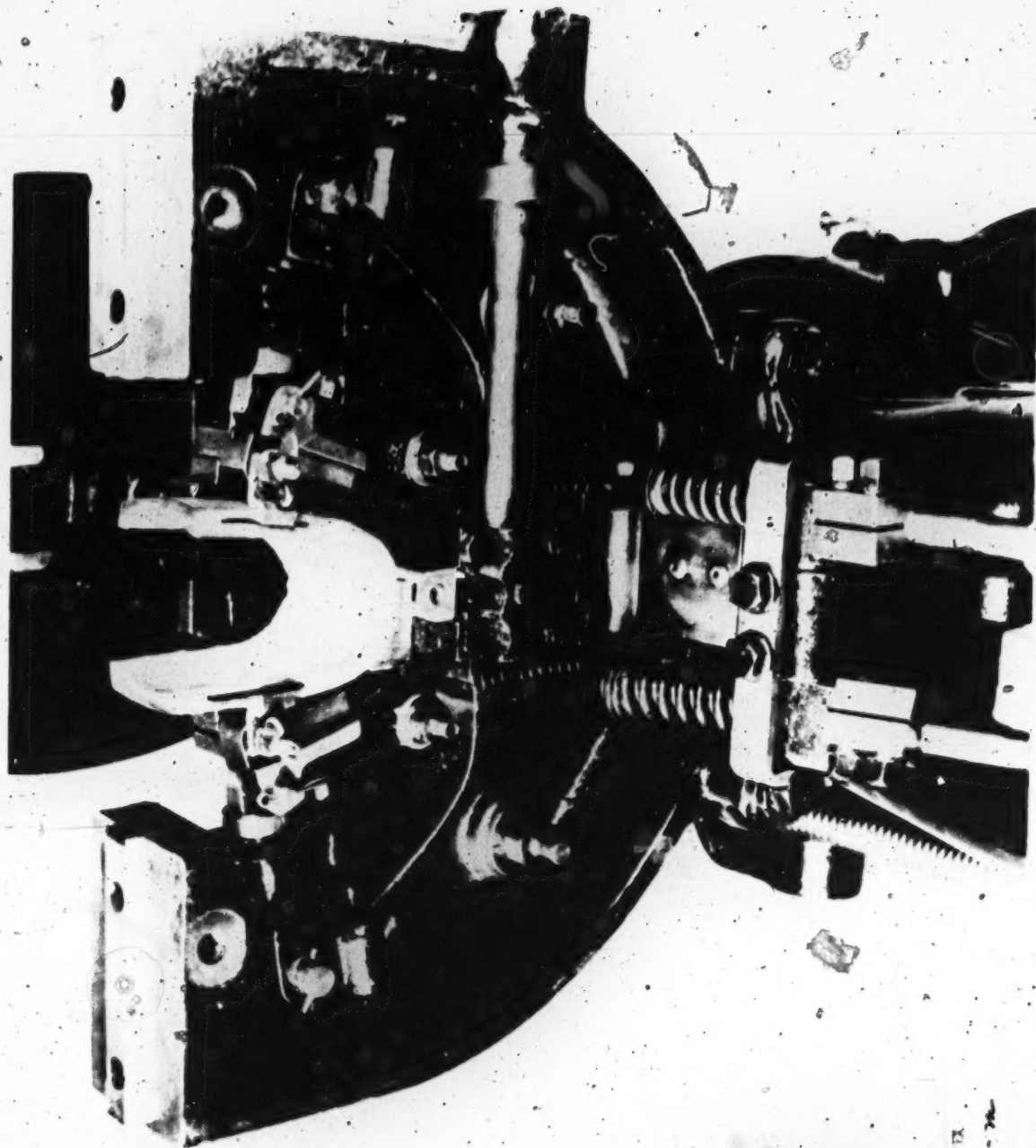
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8.7.56

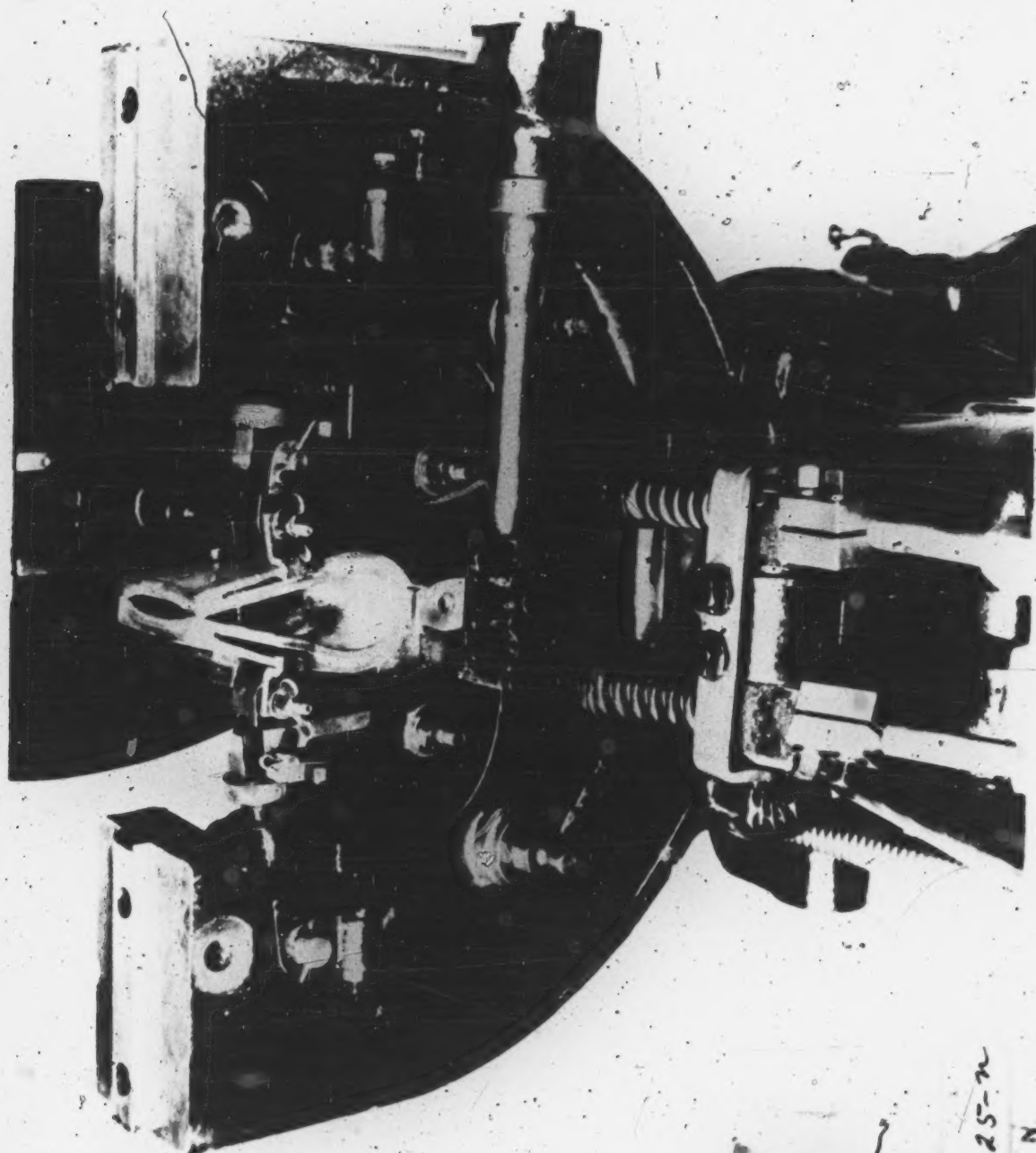


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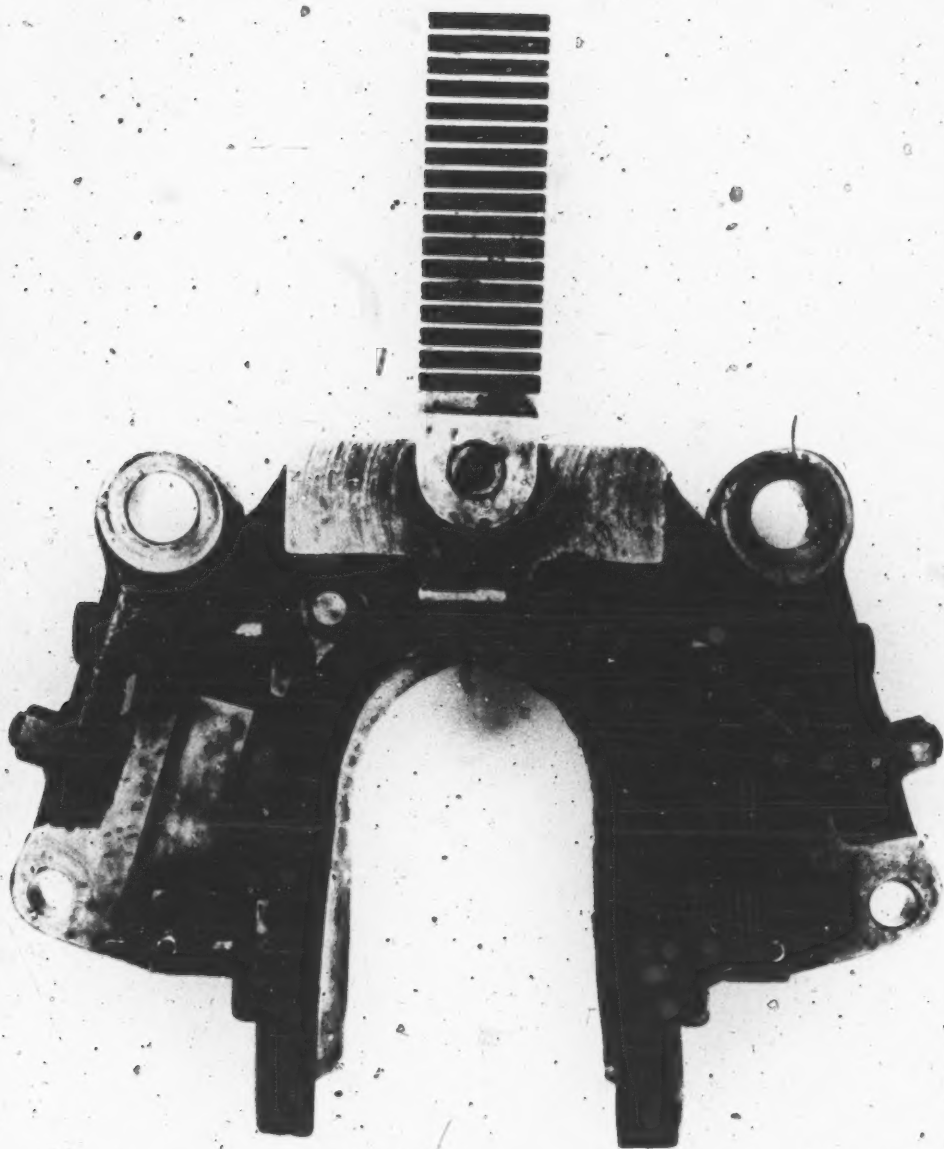
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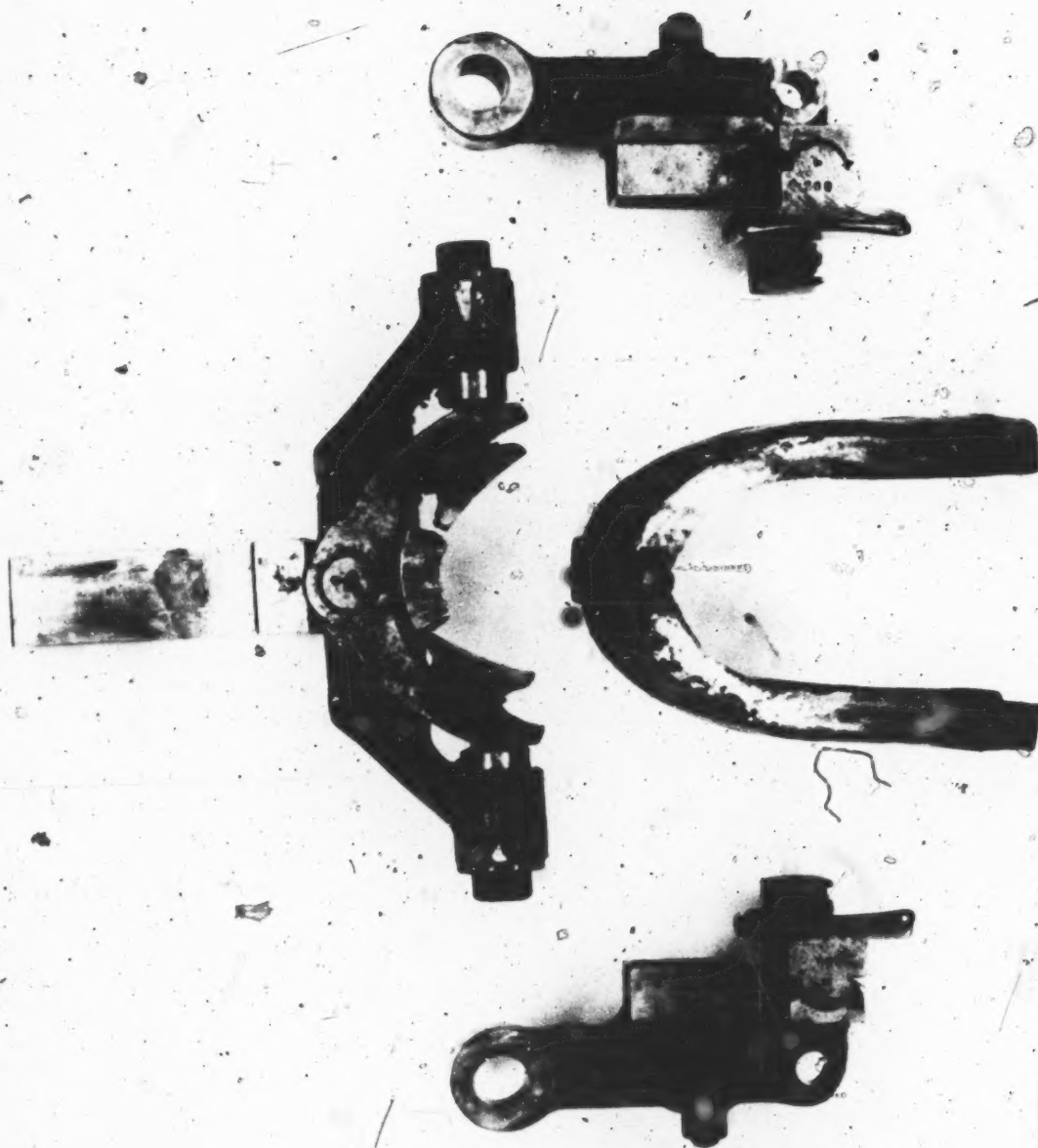
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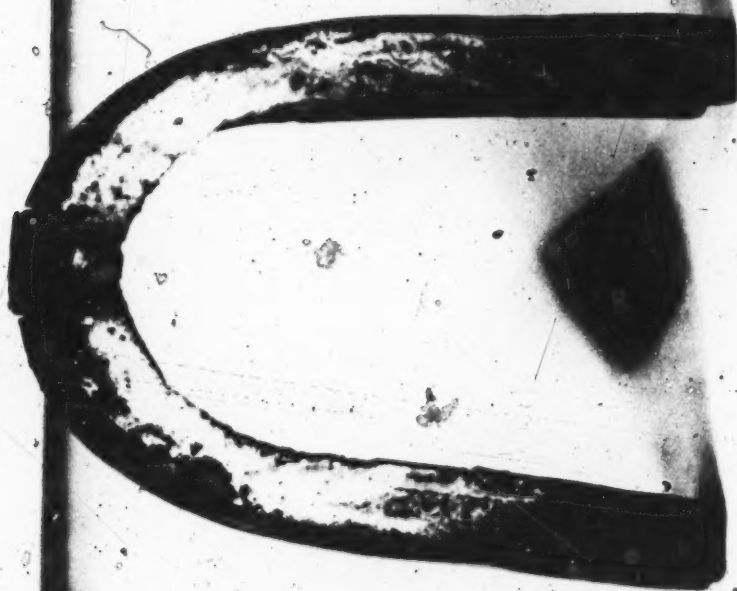
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83



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84



25-8.



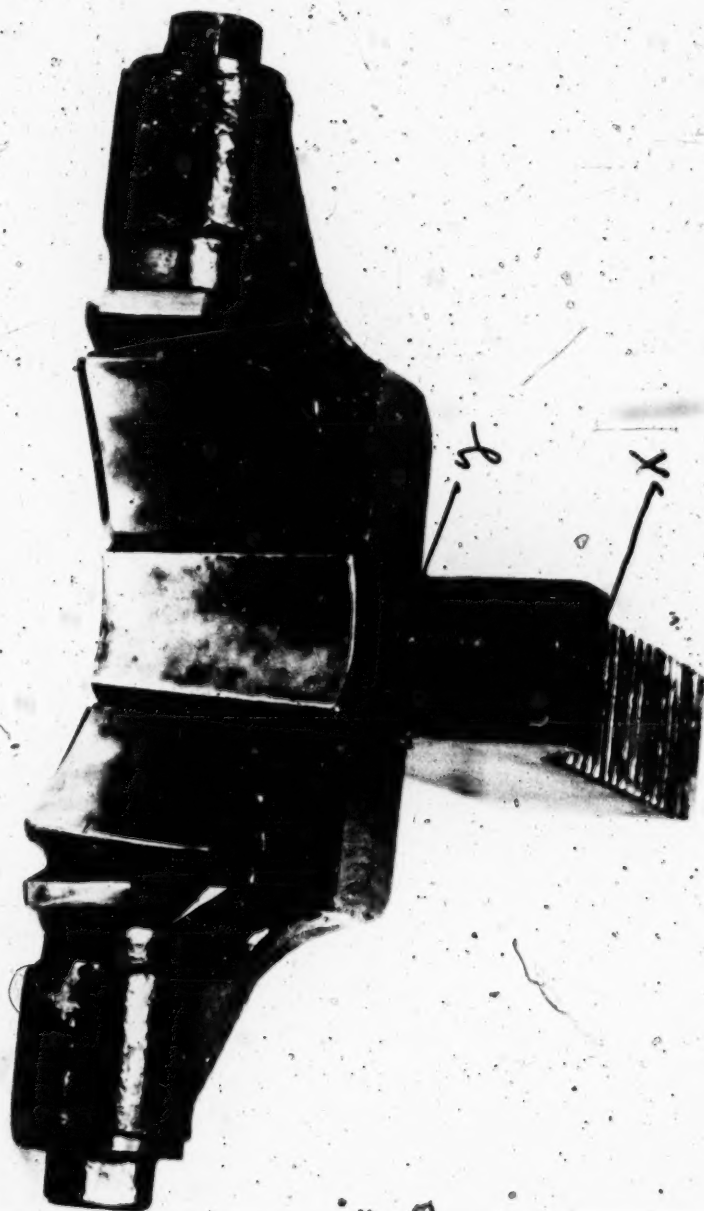
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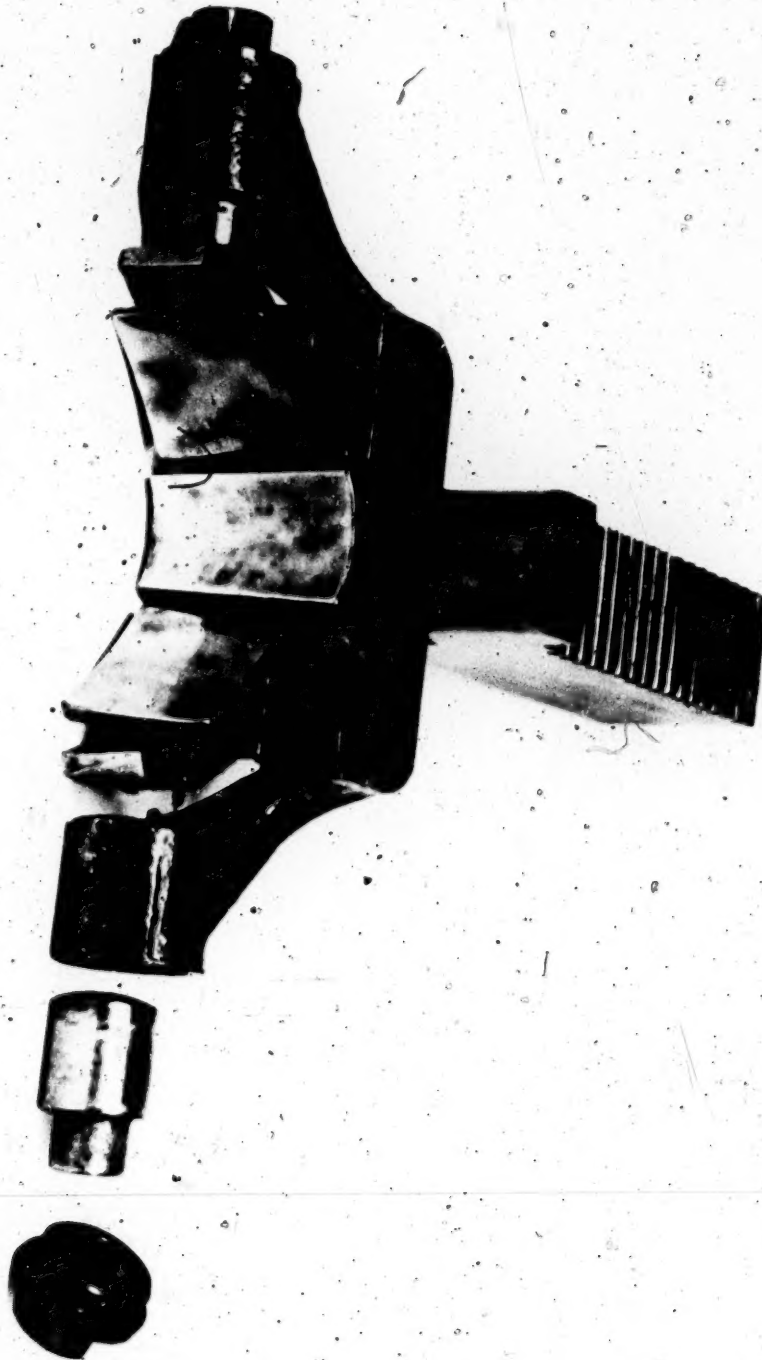
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25-4



25-11



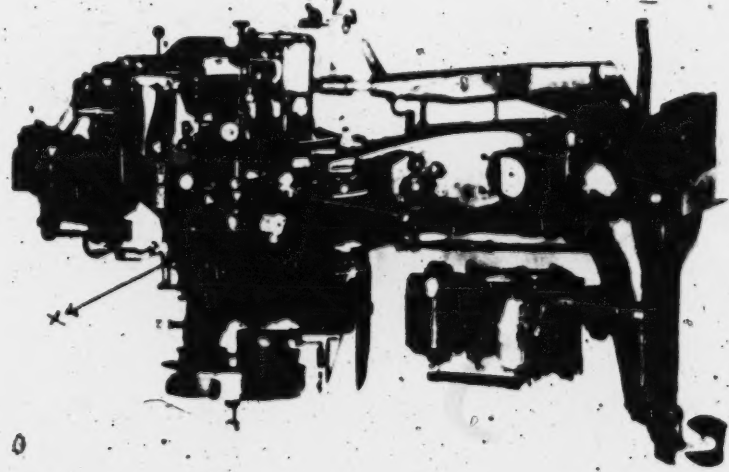
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A

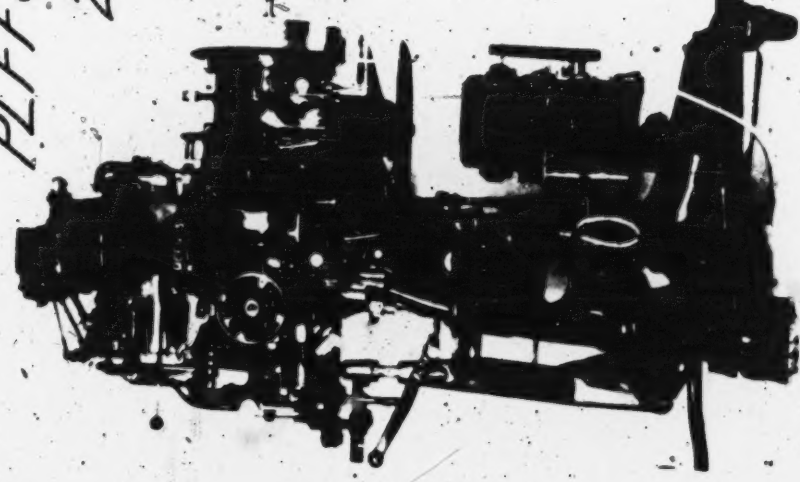
GENERAL VIEWS OF MACHINE

B

PLFFS. EX.
29

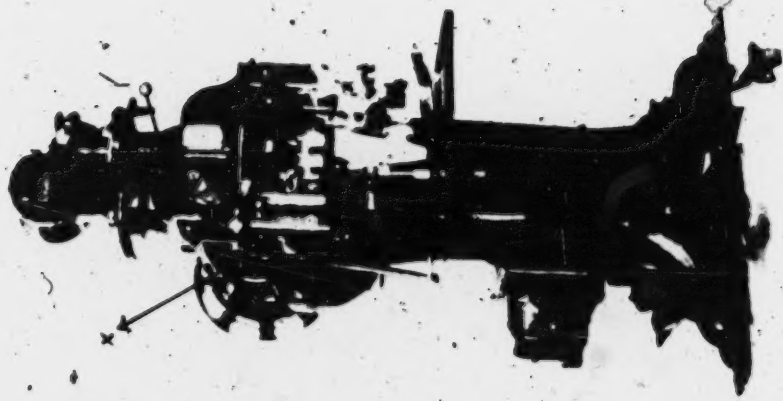


LEFT SIDE ELEVATION



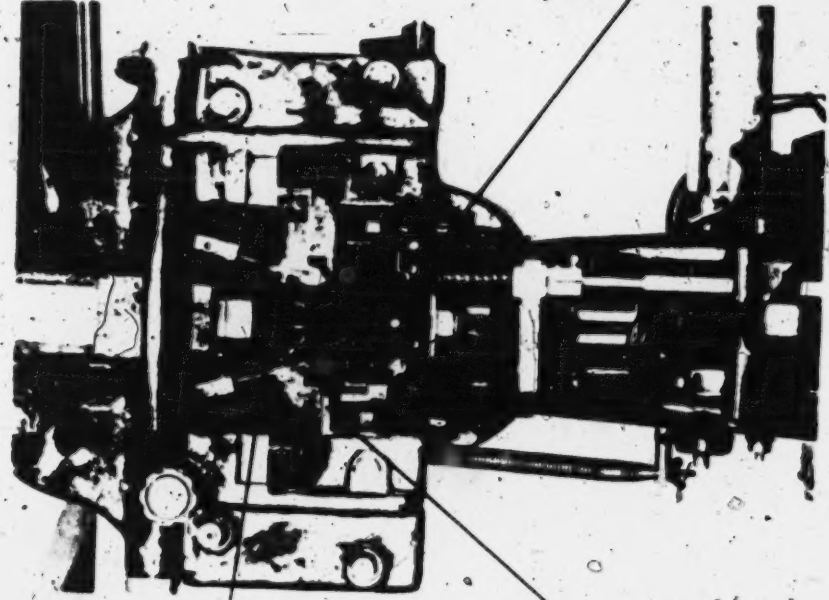
RIGHT SIDE ELEVATION

C



FRONT ELEVATION

D

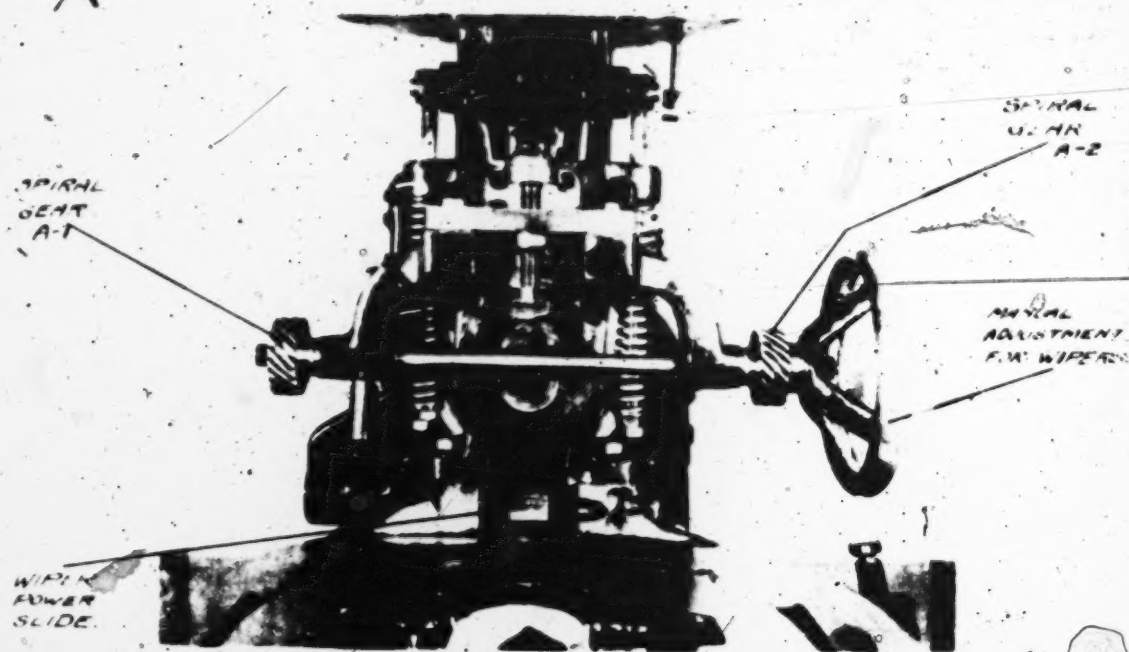


FRONT DETAIL

WIPER-TACKER MECHANISM

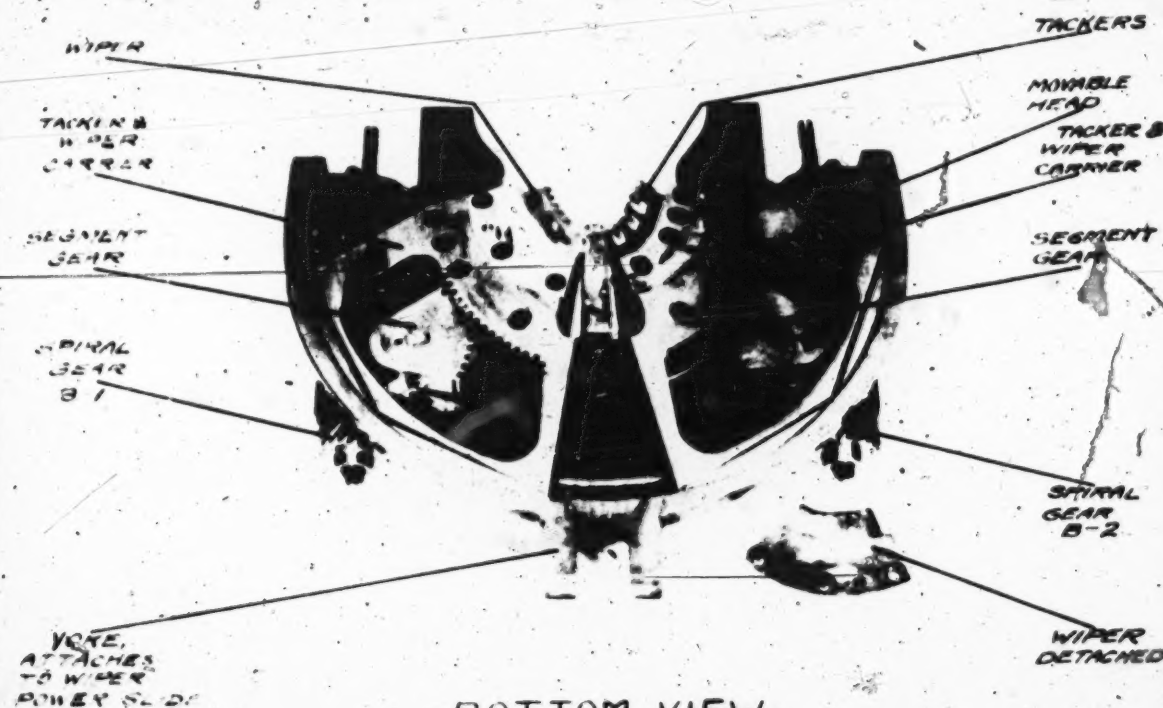
PLFFS EX. 30

A



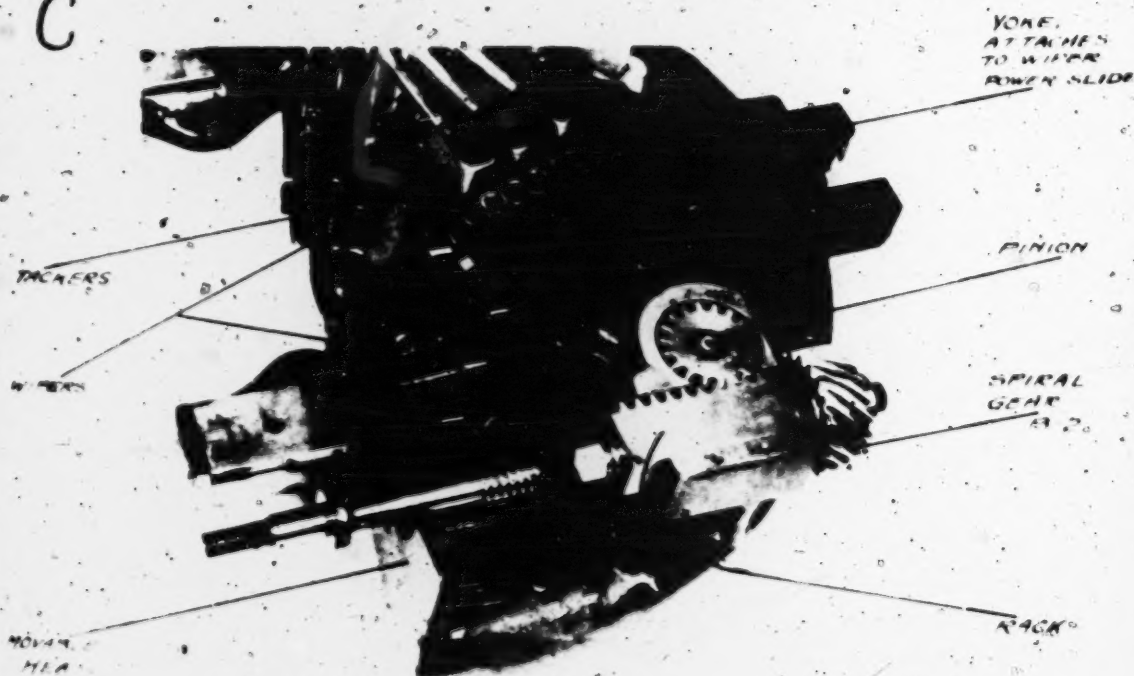
FRONT ELEVATION

B



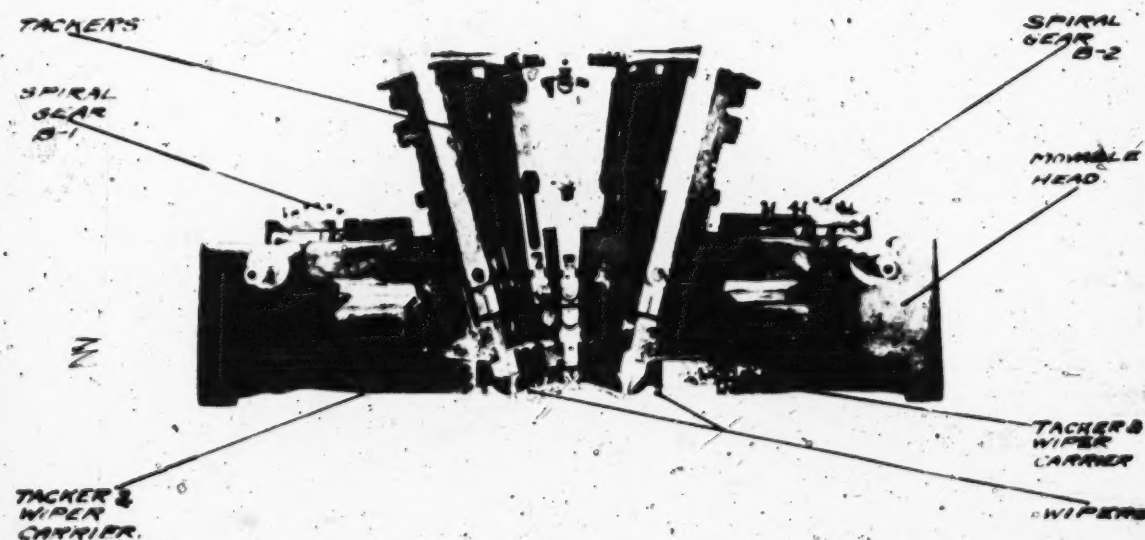
BOTTOM VIEW

C



TOP VIEW

D

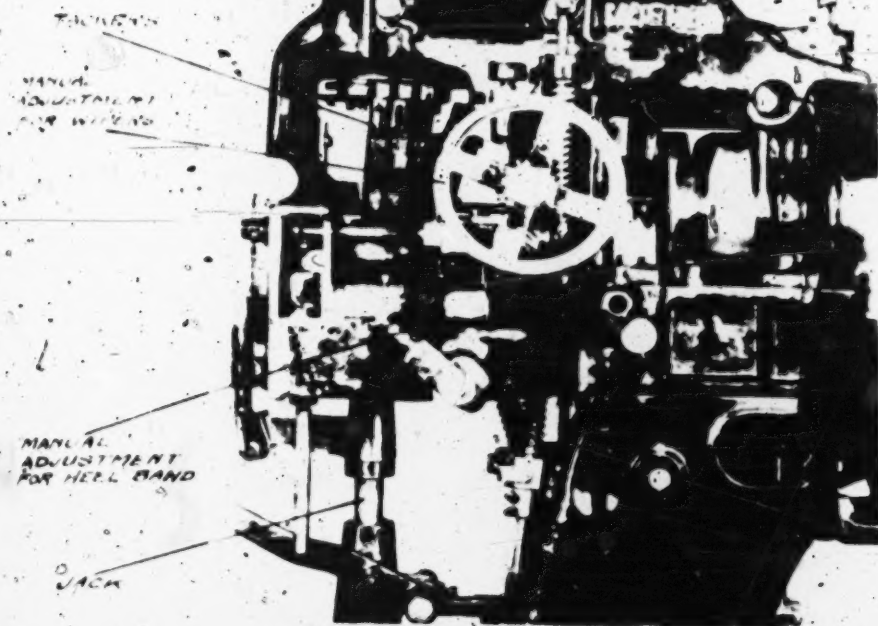


FRONT ELEVATION

HEEL BAND ADJUSTING MECHANISM

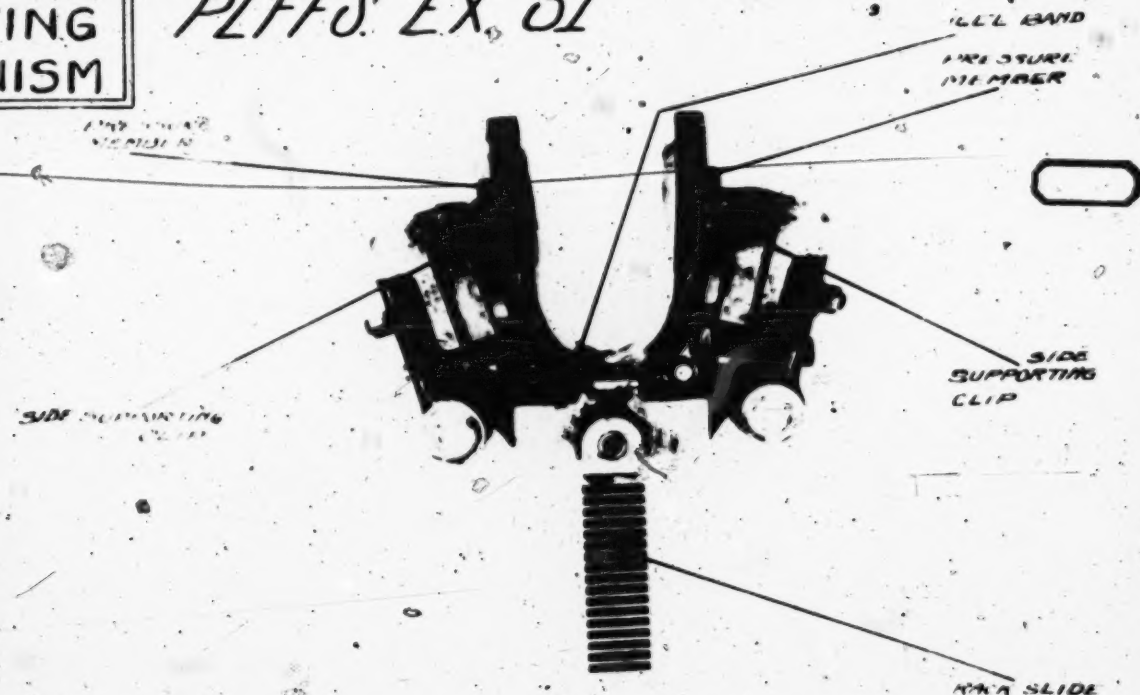
PLFFS EX. 31

A



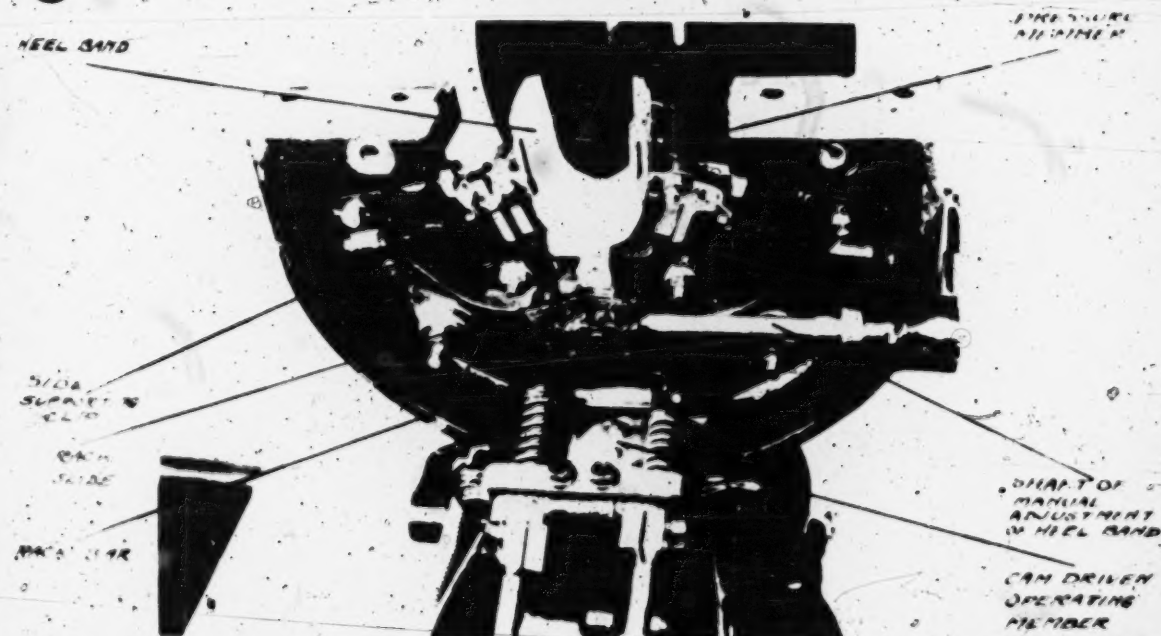
RIGHT SIDE ELEVATION

B



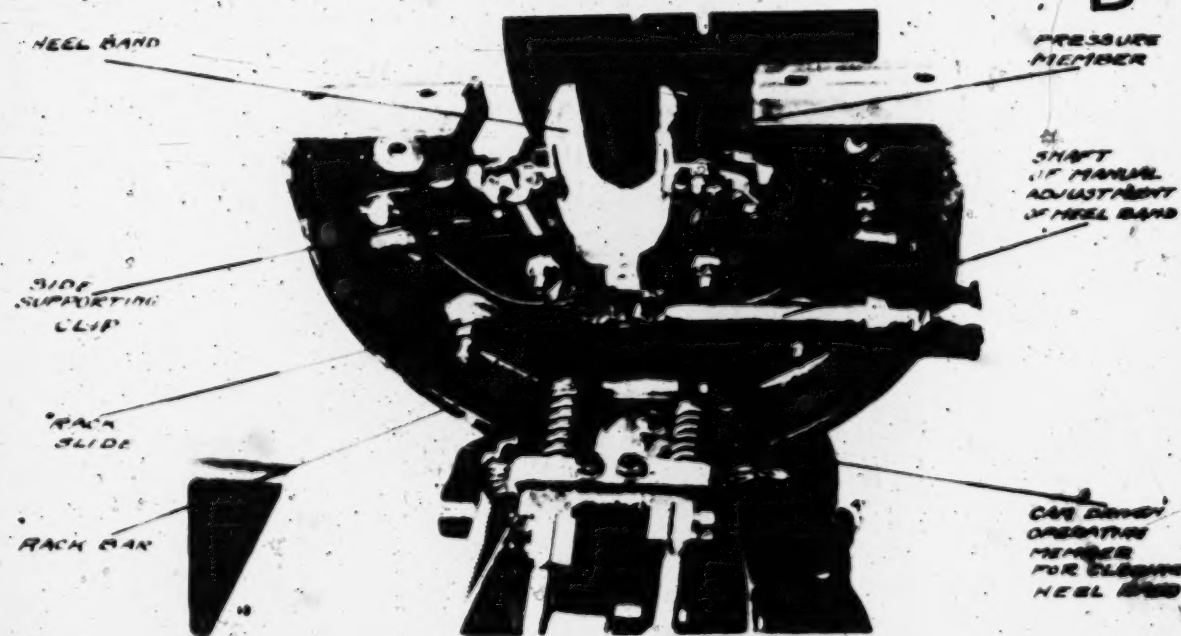
BOTTOM PLAN VIEW

C



VIEW FROM BENEATH

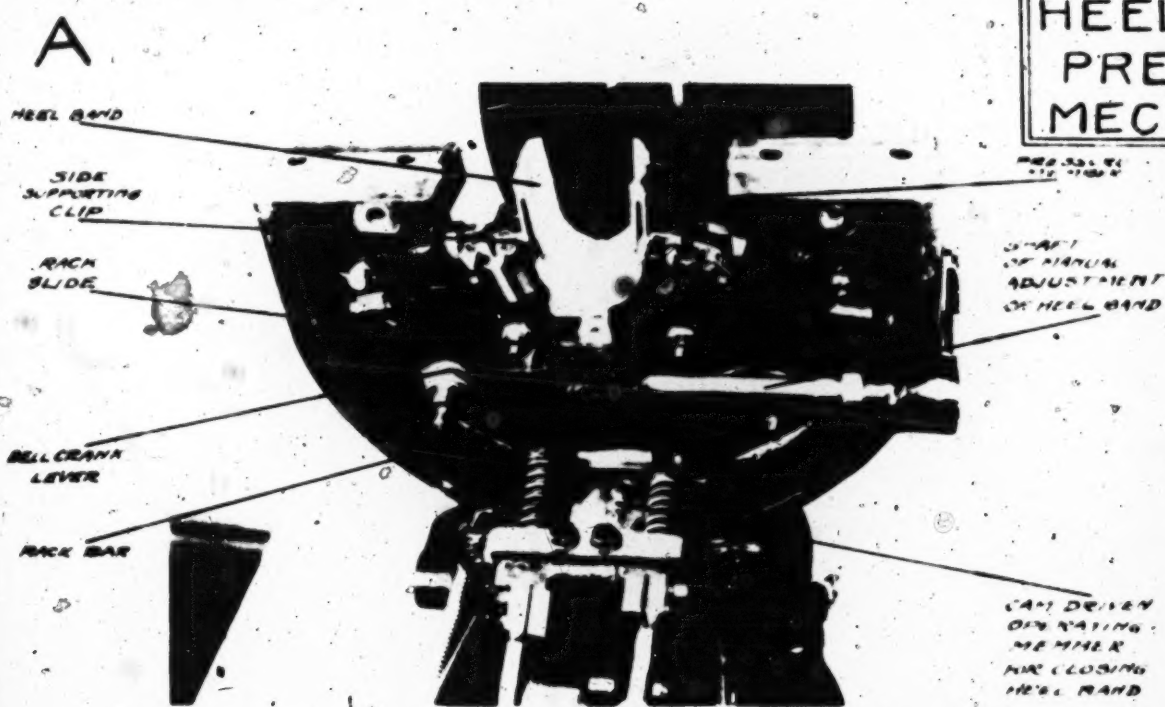
D



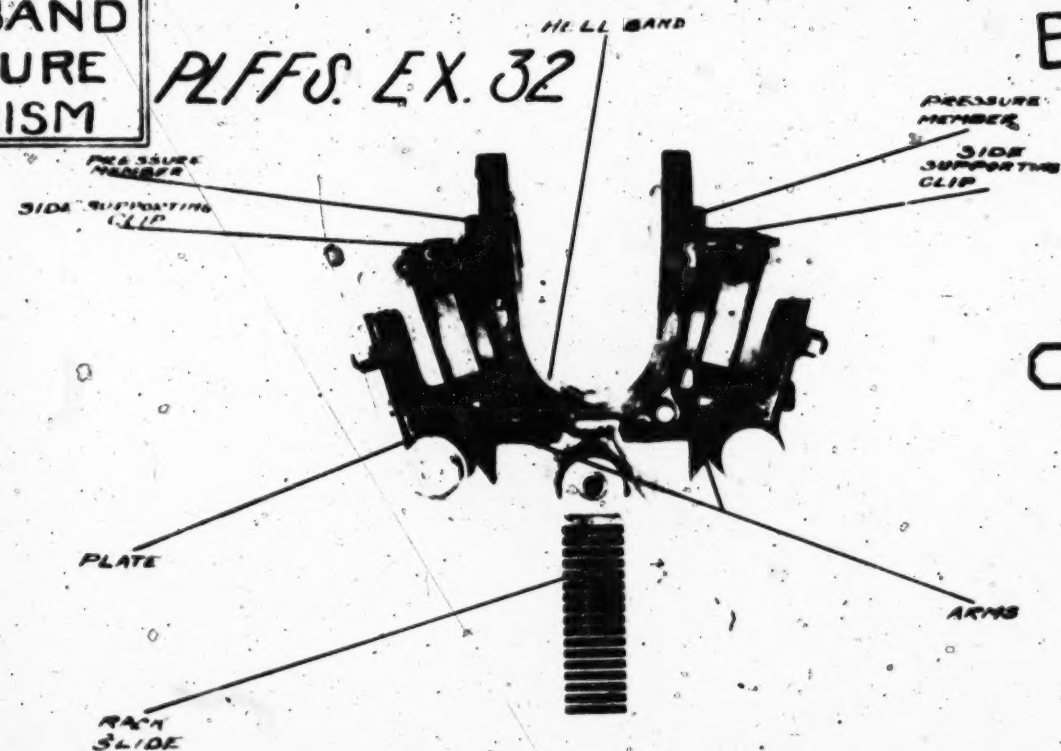
VIEW FROM BENEATH

HEEL BAND PRESSURE MECHANISM

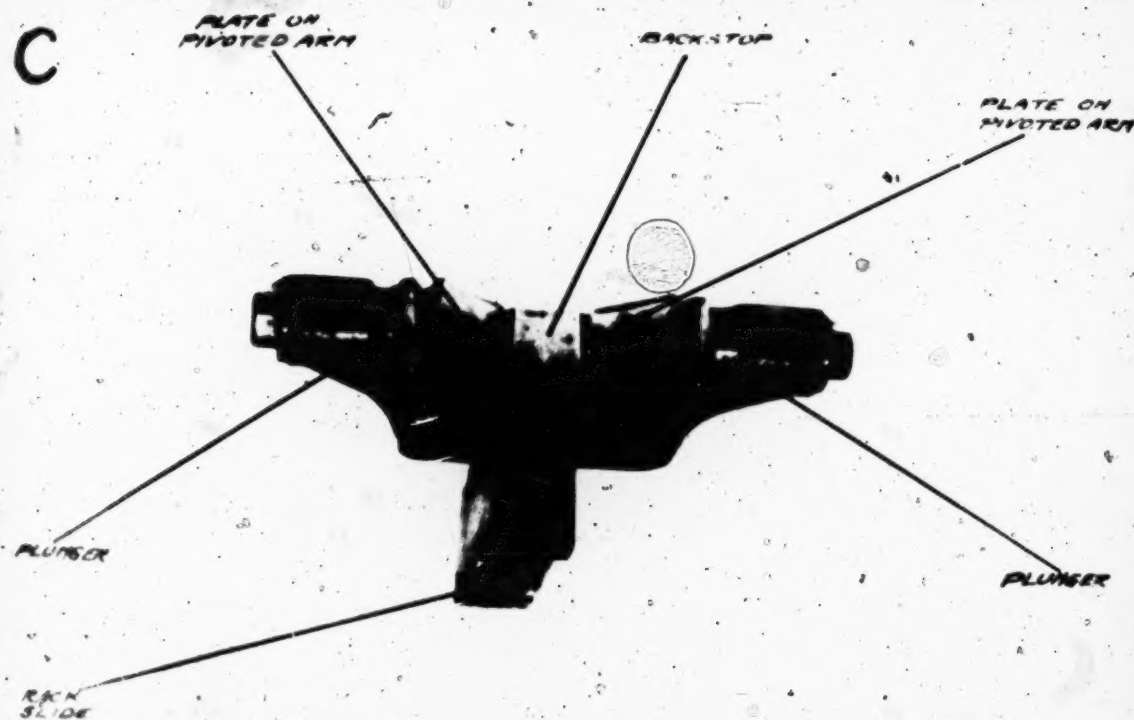
PLFFS. EX. 32



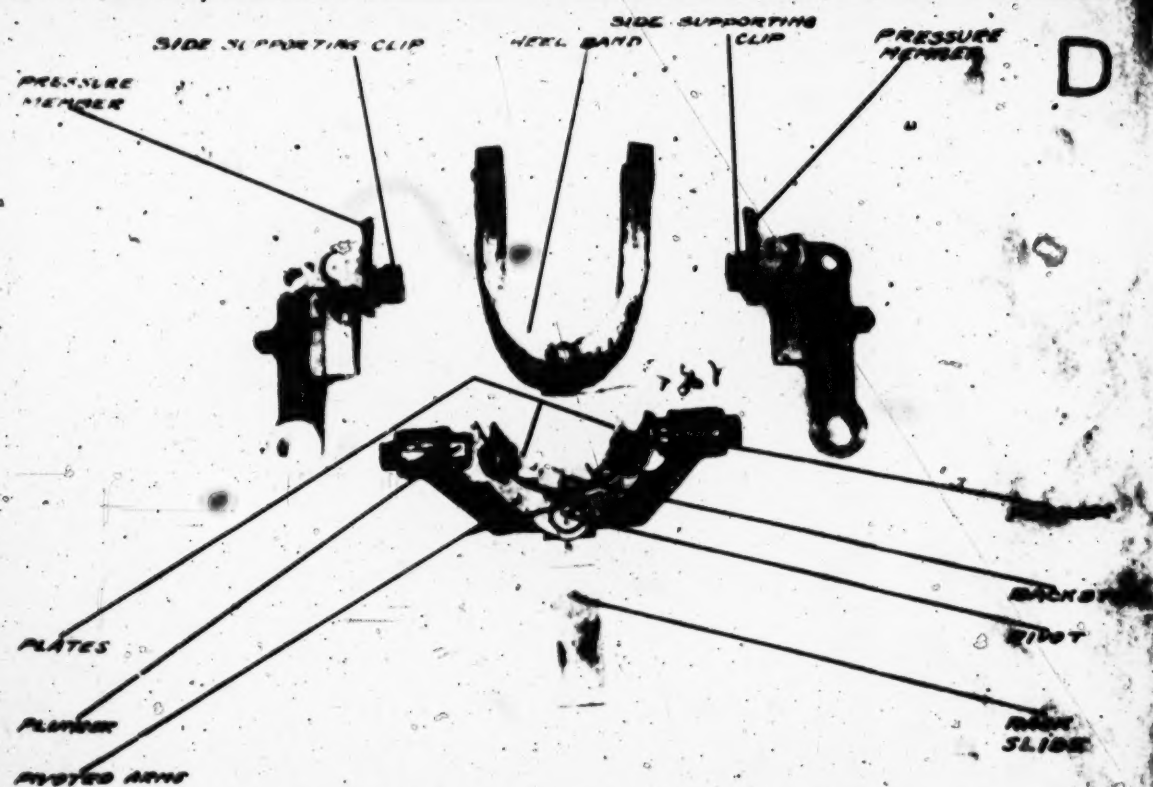
VIEW FROM BENEATH



BOTTOM PLAN VIEW



VIEW FROM BENEATH



TOP PLAN VIEW (EXPLODED)

April 5, 1932.

J. C. JORGENSEN

1,852,015

MACHINE FOR SHAPING SHOE UPPERS

Filed April 16, 1929

3. Sheets-Sheet 1

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April 5, 1932.

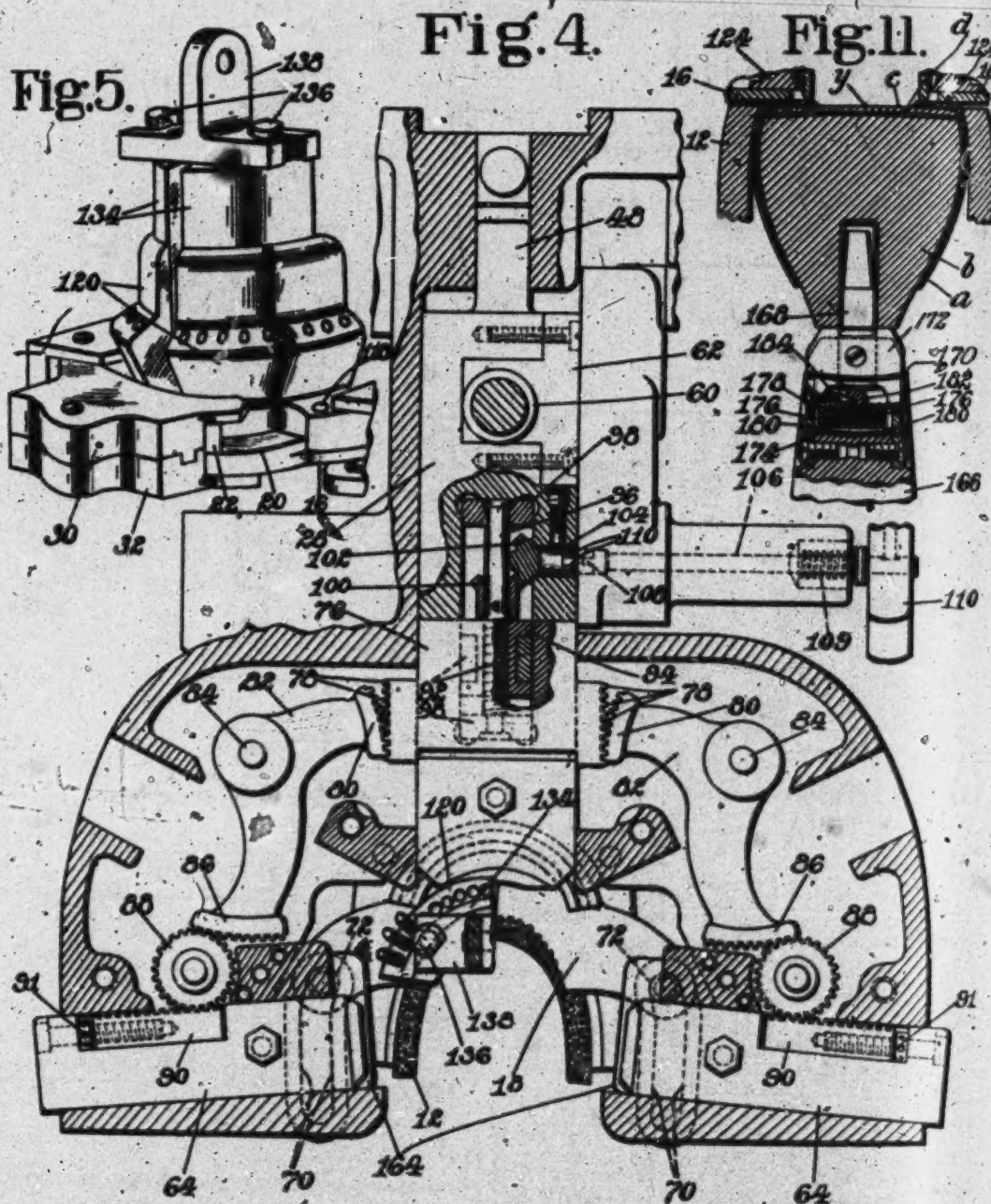
J. C. JORGENSEN

1,852,015

MACHINE FOR SHAPING SHOE UPPERS

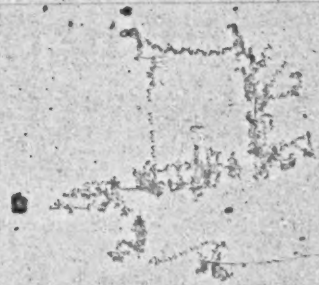
Filed April 16, 1929

3 Sheets-Sheet 2



INVENTOR-

Jacob C. Jorgensen
By his Attorney
Nelson W. Howard.



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April 5, 1932

J. C. JORGENSEN
MACHINE FOR SHAPING SHOE UPPERS

1,852,015

Filed April 16, 1929

3 Sheets-Sheet 3



Fig. 7.

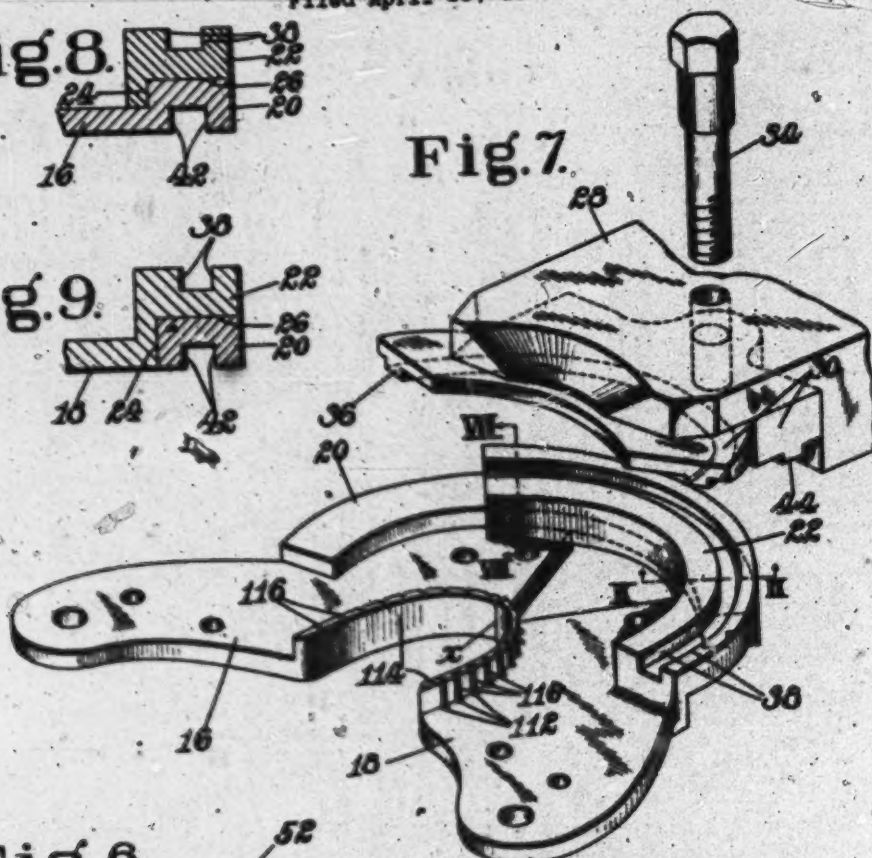


Fig. 6.

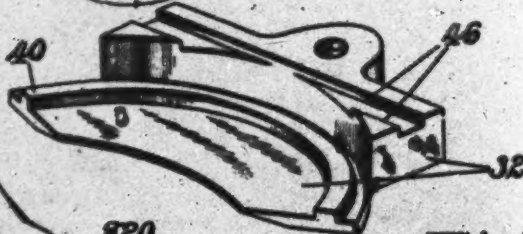
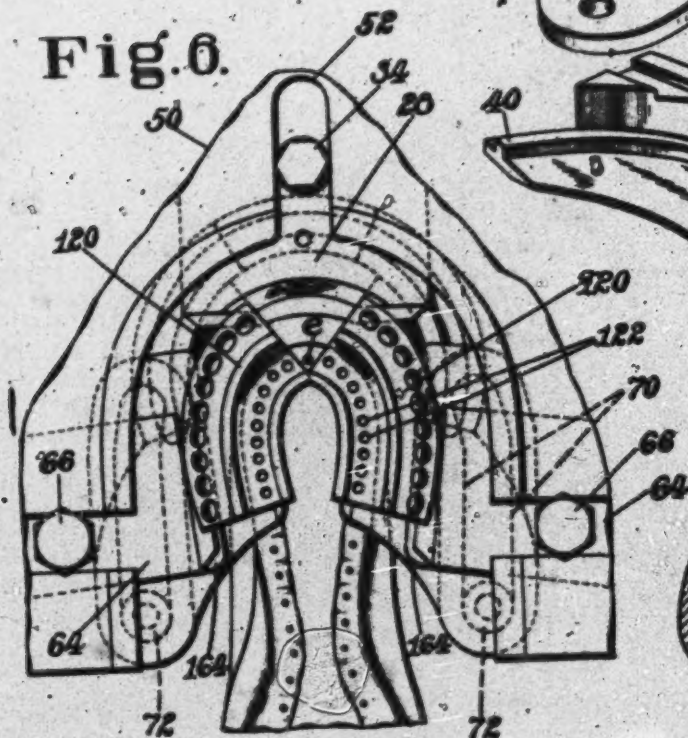
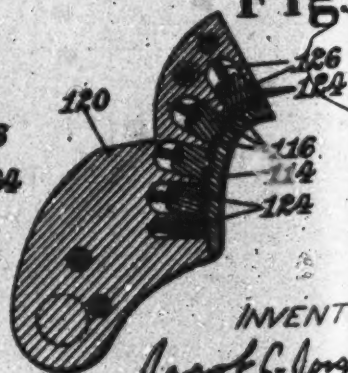


Fig. 10



INVENTOR.

Jacob C. Jorgensen
By his Attorney,
Helen M. Howard

Patented Apr. 5, 1932

1,852,015

UNITED STATES PATENT OFFICE

JACOB C. JOHNSON, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR SHAPING SHOE UPPERS

Application filed April 16, 1929. Serial No. 355,566.

This invention relates to machines for use in the manufacture of shoes for shaping uppers over lasts or other forms. The invention is herein illustrated as embodied in a machine for lasting the heel ends of shoes, but it is to be understood that in its more general aspects it is not limited to heel-end-lasting machines.

For shaping the heel ends of shoe uppers there have been provided heretofore machines having wipers for wiping the margin of the heel end of an upper inwardly over a shoe bottom part, such as a sole or insole, mounted on a last or other form, and means for driving a plurality of permanent fastenings, such as tacks, to secure the margin of the upper in overwiped position. An object of the present invention, in one important aspect, is to provide improvements in an organization of that general character, including end-wiping means and fastening means, and more particularly to provide a construction such that the upper will be fastened more tightly and smoothly than heretofore and with more satisfactory results in operating on shoes of different sizes. With this general object in view, the machine herein shown is so constructed that the fastenings are driven through openings in the wipers, so that the upper may be fastened without retracting the wipers from their innermost wiping position, and are driven, moreover, in invariably spaced relation to one another at each side of the heel seat in operating on shoes of different sizes. For driving the fastenings in this manner each of the wipers in the construction illustrated carries with it in its movement over the shoe a gang of drivers mounted in fixed parallel relation to one another and movable as a unit in a direction substantially perpendicular to the plane of the wipers to drive the fastenings, such an organization of wipers and drivers being regarded as the most satisfactory from the point of view of simplicity and compactness of structure and facility of operation of the driving means. It is, however, very desirable that the upper-securing fastenings be driven in directions inclined inwardly away from the edge of the shoe bottom, especially

in view of the fact that the heel seat of a shoe is usually somewhat convex, in order to insure that the fastenings as they are driven will have no loosening effect on the upper but will rather tend to draw its margin more tightly inward over the shoe bottom. The machine herein shown is accordingly further so constructed that while the drivers are movable, as above explained, in directions substantially perpendicular to the plane of the wipers, the fastenings are driven in inwardly inclined directions. As herein illustrated the fastenings utilized are tacks, and for the purpose in view the tacks are so positioned as to incline them inwardly in the desired directions relatively to the drivers, the latter also being so formed as to present end faces inclined in substantially parallel relations to the heads of the inclined tacks to assist in maintaining the inclinations of the tacks. The tacks as they are driven are thus all inclined inwardly away from the edge of the shoe bottom in various angular relations to one another by the action of the parallel drivers.

While the machine herein shown thus comprises an organization whereby fastenings, inserted at inclinations such as described by the action of drivers movable perpendicularly to the plane of the wipers, are driven through openings in the wipers, it is considered that in some of its novel and useful aspects the invention is not limited to a construction in which the fastenings are driven through the wipers; and it is further considered that in various aspects the invention is not limited in utility to an organization in which the fastening means is carried by the wipers.

In addition to features involving the driving of fastenings in inwardly inclined directions, as above set forth, features of novelty are also to be recognized in other aspects of the illustrated combination of wiping and fastening means, and the invention still further provides improvements in end wiper mechanism, relating particularly to means for guiding the wipers in their operative movements.

The above and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described by reference

to the accompanying drawings and pointed out in the claims.

In the drawings,

Fig. 1 is a view, partly in side elevation and partly in vertical section, of the head portion of a machine in which the invention is embodied;

Fig. 2 is a vertical section in a plane substantially at right angles to the plane of section of Fig. 1, showing portions of the structure of the machine as positioned for the driving of the upper-fastening tacks;

Fig. 3 is a sectional view similar to a portion of Fig. 2, showing the parts as positioned at the end of the tack-driving operation;

Fig. 4 is a view, partly in plan and partly in section, illustrating more clearly the construction of the wiper-operating means;

Fig. 5 is a perspective view of a portion of the wiper and tacker mechanism;

Fig. 6 is a plan view, with portions of the structure removed, illustrating more fully the relation of the wiper and tacker mechanism to the shoe at the time of the tacking operation;

Fig. 7 shows in disassembled relation the wipers and portions of their supporting means;

Fig. 8 is a section perpendicular to the plane of the wipers, in a location indicated by the line VII-VII of Fig. 7;

Fig. 9 is a section perpendicular to the plane of the wipers, in a location indicated by the line IX-IX of Fig. 7;

Fig. 10 is a section on the line X-X of Fig. 2, illustrating more fully the character of the tack-positioning means; and

Fig. 11 is a view, partly in front elevation and partly in section, showing details of the shoe-supporting means.

The invention is herein illustrated as embodied in a machine of the same general type as that disclosed in United States Letters Patent No. 1,583,044, granted on May 4, 1926, upon an application of C. H. Hoyt, and accordingly only such portions of the machine as it is necessary to refer to for an understanding of the invention will be described herein in detail. Machines of this type are designed especially for the shaping of shoe upper materials *a* (herein referred to inclusively as the upper) about the heel end of a last *b*, and include means for wiping the margin of the upper inwardly over a sole or insole *c* on the last and means for driving a plurality of fastenings such as tacks to fasten the margin of the upper in overwiped position. The invention is illustrated by reference to the lasting of a shoe of the McKay-sewed type, but it is to be understood that the machine may be used in the manufacture of shoes of various kinds, and the term "sole" is therefore frequently used hereinafter in a generic sense to designate that part to which the upper is fastened in lasting, whether it be

the insole of certain types of shoes or that part which, in shoes of other types, may be the outsole or the only sole with which the shoe is provided.

Machines of the type illustrated comprise a shoe support or jack, hereinafter more particularly referred to, upon which the shoe and last are supported and by swinging movement of which the shoe is positioned with its heel end portion within a heel-embracing band 12. This heel band is supported in the machine and is closed about the heel end of the shoe in the power operation of the machine by mechanism fully shown and described in the above-mentioned Letters Patent and which need not be described herein. In the course of the operation of the machine the shoe is engaged on the heel seat by a hold-down member or presser foot 14 also automatically controlled, as disclosed in the above-mentioned Letters Patent, and co-operating with the jack to determine the heightwise position of the shoe relatively to the wiping and fastening mechanism hereinafter described.

For wiping the margin of the upper inwardly over the sole about the heel end of the last, the machine is provided with a pair of wipers 16 and 18 mounted for swinging movements toward and from each other about an axis located, as indicated at *a* (Fig. 7), at the meeting point of the wiping edges of the two wipers. To assist in maintaining the two wipers in proper relation to each other and in guiding them in their swinging movements, in accordance with one of the objects of this invention, the wiper 16 is provided with an arm or extension 20 which is curved in an arc concentric with the above-mentioned axis and the wiper 18 is provided with a similarly curved arm or extension 22 in sliding engagement with the extension 20. By reference to Figs. 8 and 9 it will be seen that the two arms or extensions 20 and 22 are thus provided with bearing surfaces concentric with the axis of swinging movement of the wipers and in engagement with each other as indicated at 24, and also with bearing surfaces which are parallel to the plane of the wipers and are in engagement with each other as indicated at 26. The wipers are mounted on a wiper holder comprising a slide 28 and a pair of clamp members 30 and 32 which are secured together and to the slide 28 by means of a screw 34. The member 30 is provided with a tongue 36 which is seated within a groove 38 in the extension 22 of the wiper 18 when the parts are in assembled relation, this tongue and groove also being curved about the axis of swinging movement of the wipers, and there is a similar tongue-and-groove connection 40, 42 between the member 32 and the extension 20 of the wiper 16. There is also a tongue-and-groove connection 44, 46 between the two members

and 32 to assist in positioning these members in proper relation to each other. It will thus be seen that the wipers are securely held in assembled relation by means whereby they are firmly supported and are guided for swinging movements about their common axis.

The wiper-supporting slide 28 is mounted in a guideway in the head of the machine for rectilinear movements lengthwise of the shoe to advance and retract the wipers, and is provided at its rear end with a cylindrical extension 48 (Figs. 1 and 4) which is mounted in a socket in the head to assist in guiding it. Overlapping a portion of the slide is a cover plate 50 secured to the head of the machine, this cover plate having a slot 52 in which an upstanding portion of the screw 34 is guided in the movements of the slide 28. The slide 28 is operated by means of a path cam 54 formed in a cam wheel 56 which is mounted on a cam shaft 58 and is operated by means fully described in the above-mentioned Letters Patent, the connection between the cam 54 and the slide comprising a roll 60 mounted on a block 62 which is detachably secured to the slide.

For imparting to the wipers 16 and 18 swinging movements in automatically determined time relation to their movements lengthwise of the shoe, in general similarity to the organization disclosed in the prior Letters Patent, there are mounted in guideways at the opposite sides of the head of the machine slides 64 (Figs. 2 and 4), one for each of the wipers, and each slide 64 has secured thereto by means of a screw 66 a member 68 in which there is formed a slot 70 to receive a roll 72 carried by the adjacent wiper. The cover plate 50 overlaps the slides 64 and is provided with slots 74 in which upstanding portions of the screws 66 are movable. For imparting operative movements to the slides 64 the wiper-supporting slide 28 carries a member 76 provided on each of its opposite sides with a series of rack teeth 78 in engagement with a curved rack 80 formed on one end of a lever 82 which is pivotally mounted at 84 on the head of the machine. On the opposite end of the lever 82 is a curved rack 86 which engages and operates a pinion 88 in engagement with teeth formed on a rack member 90 secured adjustably by a screw 91 in a recess in the slide 64. It will thus be seen that as the wiper-supporting slide 28 moves forward to advance the wipers lengthwise of the shoe, the slides 64 through the connections described are moved inwardly toward the shoe to impart closing movements to the wipers, and that as the slide 28 is retracted, the slides 64 are likewise retracted to open the wipers. It will be understood that by the elongated slots 70 and the rolls 72 operative connections are maintained between the slides 64 and the wipers in all po-

sitions of the wipers lengthwise of the shoe.

The connections between the member 76 and the slide 28 are such that by adjusting this member relatively to the slide the wipers may be adjusted about the axis of their swinging movements to position them in proper relation to each other for operating on shoes of different sizes. For this purpose the member 76 is mounted in a recess in the slide 28 with provision for limited movements lengthwise of the slide and is provided with a pair of downwardly extending lugs 92 (Figs. 4) which fit within recesses formed in a block 94 also movable lengthwise of the slide 28 and provided with a bore having screw threads engaged by the threads of a shaft 96. The shaft 96 is rotatably mounted at its opposite ends in bearing blocks 98 which are inserted in recesses in the slide 28, and fast on the shaft is a bevel-gear 100 engaged by another bevel-gear 102 provided with a cylindrical stud 104 mounted in a bearing in one side of the slide 28. It will thus be seen that by turning the gear 102 the interiorly threaded block 94 may be moved in one direction or the other lengthwise of the slide 28, carrying with it the member 76 upon which the rack teeth 78 are formed, and that through the connections between these rack teeth and the slides 64 the wipers are adjusted about the axis of their swinging movements. For turning the gear 102 there is mounted in the head of the machine a shaft 106 having on its inner end a tongue 108 arranged to enter a recess 110 formed in the stud 104 when the shaft 106 is moved inwardly from the position illustrated in Fig. 4. The shaft 106 may thus be moved inwardly against the resistance of a spring 109 which acts normally to hold it disconnected from the stud 104 and thus to avoid interference with the operative movement of the slide 28. When the parts of the machine are in starting positions, as illustrated in Fig. 4, the shaft 106 is in alignment with the stud 104 and the tongue 108 may be connected to the stud by pushing the shaft inwardly. Then, by use of a hand wheel 110 on the shaft the required adjustment of the wipers may be effected.

For securing the margin of the upper in overwiped position in the manner contemplated by the present invention the illustrated machine is provided with means carried by the wipers 16, 18 for driving upper-fastening tacks through openings 112 (Fig. 7) extending through the wipers in locations near their wiping edges. Each of the wipers is provided at its inner edge with an upstanding flange 114 in which there are formed in perpendicular relation to the plane of the wipers a series of grooves 116 in alignment with the openings 112. Secured in fixed relation to each of the wipers by means of bolts, one of which is shown at 118 in Fig. 5, is a

tacker block 120 provided with a plurality of driver passages 122 in line with the grooves 116. Mounted in recesses in each block 120 are tack fingers 124 which are pressed by springs 126 toward the flange 114 and are so shaped as to co-operate with the grooves 116 of the flange to provide pockets for receiving and positioning upper fastening tacks *t*. The tacks are fed to the tack pockets through flexible tubes 128 which are connected to the blocks 120 and lead from tack-supplying mechanism 130 of the same character as provided heretofore in machines of the type illustrated.

Mounted in the driver passages 122 of each of the blocks 120 are a plurality of tack drivers 132 which are secured at their upper ends to a curved driver block 134 movable in a similarly curved recess provided in the block 120. It will be seen that the driver blocks 134 and the drivers 132 are thus movable in a direction substantially perpendicular to the plane of the wipers. On the upper end of each of the blocks 134 is mounted a stud 136 which is located in a slot formed in an inverted T-shaped operating member 138 and is provided with a head which overlaps this member. The member 138 is pivoted at 140 (Fig. 1) on a link 142, and the upper end of this link is pivoted at 144 on a driver-operating head 146 guided for vertical movements on a fixed rod 148. The head 146 is connected by a link 150 to a lever 152 pivotally supported at its rear end on a link 154. The lever 152 is operated and controlled by means constructed substantially as shown and described in the Letters Patent hereinbefore mentioned, comprising a cam 156 on the shaft 58 which acts through a plunger 158 to lift the lever and with it the driver-operating head 146, and springs 160 (only one of which is shown) which act through rods 162 to impart downward driver-operating movement to the lever when permitted by the cam 156. It will be evident that when the lever 152 is moved upwardly by its cam the member 138 acts through the studs 136 to lift the driver blocks 134 and thereby to retract the drivers 132, and that by reason of the slots in the member 138 and the pivotal connection of the link 142 with this member and with the head 146, the operative connections between the driver blocks 134 and their operating means are maintained at all times without interfering with the movements of the wipers.

It will be seen that the tacker blocks 120 are not only secured to the wipers by the bolts 118, but are also overlapped by a portion of the wiper-supporting and guiding member 30 (Fig. 1) on the slide 24, and by portions of the slides 64 (Figs. 2 and 4) through which the closing and opening movements of the wipers are effected. Between the overlapping portion of each slide 64 and the block 120 there is mounted a plate 164 which is be-

tween the slide and the member 68 and is secured in place by the screw 66.

It will be evident that the arrangement above described, whereby a gang of drivers 132 is carried by each of the wipers and is movable as a unit in a direction perpendicular to the plane of the wipers, is structurally simple and compact, and that it also permits the drivers to be readily operated by the comparatively simple means illustrated. It is desirable, however, that the tacks be driven in directions inclined inwardly away from the edge of the shoe bottom, in order that as they are driven they will have no loosening effect on the upper but will rather tend to draw it more tightly over the last. This is especially desirable in heel-seat lasting by reason of the fact that the heel seat of a shoe is usually more or less convex. The means hereinbefore described for positioning the tacks *t* over the openings 112 in the wipers is accordingly so constructed that the tacks as they are supported under the drivers are inclined in directions leading inwardly away from the edge of the shoe bottom, as illustrated in Fig. 2. For the purpose in view the tack fingers 124, which co-operate with the wiper flanges 114 to provide pockets for the tacks, have sloping faces centrally grooved, as indicated at 165 (Fig. 3), whereby the points of the tacks are deflected or guided into the vertical grooves 116 of the wiper flanges when the tacks are fed to the tack pockets. The fingers 124, moreover, are so formed that they do not enter the grooves 116, and accordingly these grooves provide restricted openings leading from the tack pockets which receive the lower ends of the shanks of the tacks. The tacks thus become wedged in these grooves with their points projecting downwardly below the fingers 124, as illustrated in Fig. 2, and with both their points and their heads against the vertical walls of the grooves, so that they are inclined in the manner desired. Furthermore, in the driving operation the spring-controlled fingers 124, which are yieldable in response to the movement of the drivers 132, serve by engagement with the tacks to maintain their points and heads against the walls of the grooves 116 until the tacks begin to enter the shoe. It will be understood that after the points of the tacks have entered the shoe at the inclinations referred to, their shanks will follow the same general course as they are forced farther into the shoe. The tacks are thus driven into the shoe materials in directions inclined inwardly away from the edge of the shoe bottom and in various angular relations to one another, each tack being inclined in a plane substantially perpendicular to that portion of the edge of the shoe bottom which is nearest thereto. To assist in driving the tacks in this manner the lower ends and faces of the drivers 132 are so inclined

that they are substantially parallel to the heads of the inclined tacks, as illustrated in Figs. 2 and 3. It will be understood that in response to engagement of the lower ends of the drivers with the tack fingers 124 in the tack-driving operation, the fingers are retracted far enough to permit the heads of the tacks to pass.

The means for supporting the last and shoe for the operations hereinbefore described comprises a jack mounted for swinging movements in directions lengthwise of the shoe to carry the shoe into and out of lasting position in the same general manner as illustrated in Letters Patent No. 1,558,737, granted on October 27, 1925 upon an application of R. F. McFeely, the jack including a member or post 166 (Fig. 11) which carries a heel pin or spindle 168 adapted to project into the usual spindle hole provided in the heel end of the last. It is desirable that in the heel-seat lasting operation the wipers shall wipe the margin of the upper inwardly with substantially the same pressure at the opposite sides of the heel seat. In different lasts, however, the spindle holes are not always bored in uniform angular relation to the bottom faces of the lasts. The machine herein shown is accordingly provided with work-supporting means whereby the desired pressure relation between the wipers and the opposite sides of the heel seat will be secured notwithstanding such variations in the construction of different lasts. For the purpose in view the upper end of the post 166 is provided with a slot extending laterally of the shoe, and the portions of the post at the opposite sides of the slot have upper faces, one of which is shown at 170, providing a guideway curved about an axis indicated by the point *y* (Fig. 11). Mounted in this slot is the lower portion of a block 172 which carries the spindle 168, this block having shoulders curved similarly to the faces 170 and seated thereon. The block 172 and the spindle 168 are thus permitted to move laterally of the shoe about an axis located, as illustrated, substantially at the heel-seat face of the shoe and substantially midway between the opposite sides of the shoe, so that the shoe may be adjusted to position the opposite sides of the heel seat in substantially the same relation to the plane of the wipers without any substantial lateral bodily displacement of the shoe relatively to the heel band and the wipers. The block 172 and the spindle 168 are normally centralized by means of a spring 174 which is mounted in a recess in the lower end of the block and is held under compression between disks 176 slidably movable in the recess in which the spring is mounted, the spring and the disks being held in assembled relation in the block by a lug 178 which is secured to the block in engagement with one of the disks. The block 172 is provided with a transverse slot extend-

ing across it below the spring 174, and extending into this slot in engagement with the disks 176 are lugs 180 which are secured to the post 166. It will thus be evident that while the block 172 and its spindle are normally centralized by the spring 174, they may move in either direction along the curved guideway 170 against the resistance of the spring. The operator may effect such movement by tipping the last in one direction 75 or the other as he presents the shoe to the machine, or the movement may result from excess of pressure of the wipers at one side or the other of the heel seat, the arrangement thus being such that if the shoe is not presented initially in position to receive substantially the same wiper pressure at the opposite sides of the heel seat, the pressure will be substantially equalized automatically in the operation of the machine. In order to limit 80 the extent of movement of the block 172 there is further provided a screw 182, shown in section, which is mounted in the post 166 and projects into a slot 184 in the block 172.

While the axis *y* is herein illustrated as located exactly on the heel-seat face of the insole 4, as it would preferably be, for example, in operating on a shoe of average size, it will be understood that the position of the axis in relation to the shoe bottom will vary slightly 85 in the operation of the machine on shoes of different sizes. Such variation is not enough to result in any material lateral displacement of a shoe of any size within the small range of adjustment necessary for securing equalization of pressure on the heel seat. Novel features of the illustrated shoe-supporting means are claimed in a divisional application, Serial No. 549,400 filed on July 8, 1931.

In the operation of the machine, briefly 105 summarized, the shoe is positioned in the manner hereinbefore described and is clamped about its heel end in the power operation of the machine by the action of the heel band 12. The wipers 16 and 18 are 110 then advanced and closed by the cam 54 and the operating connections hereinbefore described to wipe the margin of the heel end portion of the upper inwardly over the sole, the cam in the construction herein 115 shown being so shaped that there are thus imparted to the wipers two full overwiping movements in succession. At the end of the second overwiping movement and while the wipers are maintained at the inner limit of 120 that movement, the tacks are driven through the openings 112 in the wipers to secure the margin of the upper in overwiped position. It will be understood that prior to the driving operation the tacks are supplied to the 125 tack pockets and are held therein in positions inclined inwardly away from the edge of the shoe bottom, as hereinbefore more particularly described. When the cam 156 releases the lever 152 to the action of the springs 160, 130

the two driver blocks 134 are moved downwardly to cause the drivers to drive the tacks from the tack pockets and into the shoe. As the tacks are forced downwardly by the drivers, the tack fingers 124 hold them with their points and heads against the vertical walls of the grooves 116 until they begin to enter the shoe, after which they follow substantially the inclined courses thus determined until they are driven fully in and are clinched on the metal plate *d* on the last, as illustrated in Fig. 3. It will be evident that with the tacks thus driven in predetermined inwardly inclined directions, insurance is afforded that they will be clinched inwardly in directions away from the edge of the shoe bottom. After the tacks have thus been driven the drivers are lifted and the wipers are retracted from over the shoe, the various parts of the machine being returned to their starting positions.

Experience has demonstrated that it is entirely practicable, at all events for heel-seat lasting, to use the same wipers in operating on shoes of widely different sizes including, in fact, the entire range of sizes of adults' shoes, the wipers and the tacking means thereon being adjusted for different sizes by the described mechanism controlled by the hand wheel 110. It will accordingly be evident that the upper-fastening tacks driven through each wiper are spaced at equal distances from one another in the different sizes of shoes, which is a very desirable condition from the shoe-making standpoint. For widely differing sizes the numbers of the tacks may be varied by the use of means with which machines of the type illustrated are customarily provided for either permitting or preventing delivery of tacks to one or more of the tack pockets at each side located nearest to the front end of the heel seat.

In Fig. 6 there is shown at the rear end of the heel seat a tack *e* which is an assembling tack driven and clinched as usual in the assembling of the shoe materials prior to the heel-seat lasting operation, this tack occupying a position between the rear-most tacks driven by the mechanisms carried by the wipers.

In the appended claims the expression "edge of the shoe bottom" used in defining the relation of the fastenings to the shoe is to be understood as meaning, with reference to each fastening, that portion of the edge which is nearest to the location of the fastening.

Having described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpen-

dicular to the plane of the wipers to drive fastenings for securing the margin of the upper in overwiped position, and means for controlling the fastenings in such manner as to cause them to be driven into the shoe in directions inclined inwardly away from the edge of the shoe bottom by the movement of the drivers.

2. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive fastenings for securing the margin of the upper in overwiped position, and means for maintaining the fastenings until they begin to enter the shoe in such inclined relation to the paths of movement of the drivers as to direct them inwardly away from the edge of the shoe bottom as they are driven.

3. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, and means for positioning each tack prior to its entry into the shoe with its point and one side of its head substantially tangential to a line parallel to the direction of movement of its driver and in such relation to the shoe as to direct the tack on an incline inwardly away from the edge of the shoe bottom as it is driven.

4. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, and means for positioning each tack prior to its entry into the shoe with its point and one side of its head substantially tangential to a line parallel to the direction of movement of its driver and in such relation to the shoe as to direct the tack on an incline inwardly away from the edge of the shoe bottom as it is driven, each driver having its tack-engaging end face so inclined as to position it in substantially parallel relation to the head of the inclined tack.

5. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, means arranged to present for each tack a guide wall substantially parallel to the direction of the upper-

ment of its driver and located at that side of the tack which is farthest from the edge of the shoe bottom, and means for yieldingly pressing the point and the head of each tack against said guide wall to direct the tack inwardly away from the edge of the shoe bottom as it is driven.

6. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, means arranged to present for each tack a guide wall substantially parallel to the direction of the movement of its driver and located at that side of the tack which is farthest from the edge of the shoe bottom, and a plurality of spring-controlled tack fingers arranged to press the points and the heads of the tacks against their guide walls in the tack-driving operation to direct the tacks inwardly away from the edge of the shoe bottom as they are driven, the drivers being so formed as to present tack-engaging end faces substantially parallel to the heads of the inclined tacks.

7. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, means arranged to present for each tack a guide wall substantially parallel to the direction of the movement of its driver and located at that side of the tack which is farthest from the edge of the shoe bottom, and yieldable tack fingers arranged to co-operate with said guide walls to provide pockets for the tacks, said fingers and guide walls being so formed and arranged as to provide restricted openings leading from the tack pockets adjacent to the guide walls to receive the lower ends of the tacks and position the tacks initially with their points and heads against said guide walls in inclined relation to the direction of movement of the drivers.

8. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, and means for positioning the tacks in such inclined relation to the paths of movement of the drivers as to direct them inwardly away from the edge of the shoe bottom as they are driven, the drivers being so formed as to present tack-

engaging end faces substantially parallel to the heads of the inclined tacks.

9. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, and means for driving a plurality of tacks into the shoe in directions inclined inwardly away from the edge of the shoe bottom for securing the margin of the upper in overwiped position, said means comprising a plurality of drivers operatively movable in directions substantially perpendicular to the plane of the wipers and provided with tack-engaging end faces inclined to said plane for driving the tacks at the desired inclinations.

10. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive fastenings for securing the margin of the upper in overwiped position, and means carried by the wipers for positioning the fastenings in such inclined relation to the paths of movement of the drivers as to cause them to be driven into the shoe in directions inclined inwardly away from the edge of the shoe bottom by the movement of the drivers.

11. A machine of the class described having, in combination, means for working the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers all movable in substantially parallel relation to one another for driving fastenings at both sides of the end of the shoe bottom to secure the margin of the upper to the sole, and means for controlling the fastenings in such manner as to cause each fastening to enter the shoe in a direction inclined inwardly away from the edge of the shoe bottom in a plane substantially perpendicular to said edge in response to the movement of its driver.

12. A machine of the class described having, in combination, means for working the margin of an upper inwardly over a sole about an end of a shoe, a plurality of drivers all movable in substantially parallel relation to one another for driving tacks at both sides of the end of the shoe bottom to secure the margin of the upper to the sole, and yieldable means for positioning said tacks in such inclined relation to the paths of movement of the drivers as to cause each tack to be driven into the shoe in a direction inclined inwardly away from the edge of the shoe bottom in a plane substantially perpendicular to said edge.

13. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe and provided with a plurality of openings extending through

them, a plurality of drivers movable in directions substantially perpendicular to the plane of the wipers to drive fastenings through said openings for securing the margin of the upper in overwiped position, and means for positioning the fastenings in such inclined relation to the paths of movement of the drivers as to cause them to be driven into the shoe in directions inclined inwardly away from the edge of the shoe bottom by the movement of the drivers.

14. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe and provided with a plurality of openings extending through them, a plurality of drivers mounted to move inwardly with said wipers in fixed relation thereto and movable in directions substantially perpendicular to the plane of the wipers to drive fastenings through said openings for securing the margin of the upper in overwiped position, and means for controlling the fastenings in such manner as to cause them to enter the shoe in directions inclined inwardly away from the edge of the shoe bottom in response to the movement of the drivers.

15. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe and provided with a plurality of openings extending through them, a plurality of drivers mounted to move inwardly with said wipers in fixed relation thereto and movable in directions substantially perpendicular to the plane of the wipers to drive fastenings through said openings for securing the margin of the upper in overwiped position, and means for maintaining the fastenings until they begin to enter the shoe in such inclined relation to the paths of movement of the drivers as to direct them inwardly away from the edge of the shoe bottom as they are driven.

16. A machine of the class described having, in combination, wipers movable to wipe the margin of an upper inwardly over a sole about an end of a shoe and provided with a plurality of openings extending through them, a plurality of drivers mounted to move inwardly with said wipers in fixed relation thereto and movable in directions substantially perpendicular to the plane of the wipers to drive tacks through said openings for securing the margin of the upper in overwiped position, and means for positioning the tacks in such inclined relation to the paths of movement of the drivers as to direct them inwardly away from the edge of the shoe bottom as they are driven, the drivers being so formed as to present tack-engaging end faces substantially parallel to the heads of the inclined tacks.

17. A heel-end-lasting machine having, in

combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper about the heel end of a last inwardly over the bottom of the last, a gang of drivers carried by each of said wipers and movable in a direction substantially perpendicular to the plane of the wipers to drive fastenings for securing the margin of the upper in overwiped position, and means for controlling said fastenings in such manner as to cause them to enter the shoe in directions inclined inwardly away from the edge of the shoe bottom in response to the movement of the drivers.

18. A heel-end-lasting machine having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper about the heel end of a last inwardly over the bottom of the last, a gang of drivers carried by each of said wipers and movable in a direction substantially perpendicular to the plane of the wipers to drive tacks for securing the margin of the upper in overwiped position, and means for positioning said tacks in such inclined relation to the paths of movement of the drivers as to direct them inwardly away from the edge of the shoe bottom as they are driven, the drivers being so formed as to present tack-engaging end faces substantially parallel to the heads of the inclined tacks.

19. A heel-end-lasting machine having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper about the heel end of a last inwardly over the bottom of the last, said wipers having a plurality of openings extending through them, a gang of drivers mounted for movement inwardly with each of said wipers in fixed relation to one another and movable in a direction substantially perpendicular to the plane of the wipers to drive tacks through said openings for securing the margin of the upper in overwiped position, and means for positioning said tacks in such inclined relation to the paths of movement of the drivers as to cause them to enter the shoe in directions inclined inwardly away from the edge of the shoe bottom.

20. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having an upstanding flange thereon and having a plurality of openings extending through it adjacent to said flange, means movable with each wiper constructed to co-operate with said flange to provide pockets for a plurality of fastenings, and means for driving the fastenings through the openings in the wipers to secure the margin of the upper in overwiped position.

21. A machine of the class described having, in combination, a pair of wipers mount-

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ed for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having an upstanding flange thereon and having a plurality of openings extending through it adjacent to said flange, a device secured in fixed relation to each wiper and having a plurality of yieldable members constructed and arranged to co-operate with said flange to provide pockets for a plurality of fastenings, and means for driving the fastenings through the openings in the wipers to secure the margin of the upper in overwiped position.

22. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having an upstanding flange thereon and having a plurality of openings extending through it adjacent to said flange, a device secured in fixed relation to each wiper and having a plurality of yieldable members constructed and arranged to co-operate with said flange to provide pockets for a plurality of fastenings, and a plurality of drivers carried by the wipers for driving the fastenings through said openings to secure the margin of the upper in overwiped position.

23. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having a plurality of openings extending through it and having thereon an upstanding flange provided with grooves in alinement with said openings, means movable with each wiper constructed to co-operate with said grooves to provide pockets for a plurality of fastenings, and means for driving the fastenings through the openings in the wipers to secure the margin of the upper in overwiped position.

24. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having thereon an upstanding flange and having a plurality of openings extending through it adjacent to said flange, means movable with each wiper for positioning a plurality of tacks with their points and heads against said flange to incline them relatively to the plane of the wipers in directions leading inwardly away from the edge of the shoe bottom, and means for driving the tacks thus positioned through the openings in the wipers to secure the margin of the upper in overwiped position.

25. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about

an end of a shoe, each of said wipers having thereon an upstanding flange and having a plurality of openings extending through it adjacent to said flange, means movable with each wiper for positioning a plurality of tacks with their points and heads against said flange to incline them relatively to the plane of the wipers in directions leading inwardly away from the edge of the shoe bottom, and drivers movable in directions substantially perpendicular to the plane of the wipers to drive the tacks thus positioned through the openings in the wipers for securing the margin of the upper in overwiped position.

26. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having thereon an upstanding flange and having a plurality of openings extending through it adjacent to said flange, means movable with each wiper for positioning a plurality of tacks with their points and heads against said flange to incline them relatively to the plane of the wipers in directions leading inwardly away from the edge of the shoe bottom, and a gang of drivers carried by each wiper and movable in a direction substantially perpendicular to the plane of the wiper to drive the tacks thus positioned through the openings in the wiper for securing the margin of the upper in overwiped position.

27. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having a plurality of openings extending through it and having thereon an upstanding flange provided with grooves in substantially perpendicular relation to the plane of the wiper and in alinement with said openings, yieldable means carried by each wiper constructed to co-operate with said grooves to provide pockets for a plurality of tacks and to position the tacks with their points and heads against the walls of the grooves to incline them relatively to the plane of the wipers in directions leading inwardly away from the edge of the shoe bottom, and drivers movable in directions substantially perpendicular to the plane of the wipers to drive the tacks through the openings in the wipers for securing the margin of the upper in overwiped position.

28. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having a plurality of openings extending through it and having thereon an upstanding flange provided with grooves in substantially perpendicular relation to the plane of the wiper and

in alignment with said openings, a member secured in fixed relation to each of said wipers and provided with driver passages in alignment with said grooves, drivers in said passages, and means co-operating with the grooves of said flange to position the fastenings in such inclined relation to the paths of movement of the drivers as to cause them to enter the shoe in directions inclined inwardly away from the edge of the shoe bottom in response to the movement of the drivers for securing the margin of the upper in overwiped position.

29. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having a plurality of openings extending through it and having thereon an upstanding flange provided with grooves in substantially perpendicular relation to the plane of the wiper and in alignment with said openings, yieldable tack fingers arranged to co-operate with said grooves to provide pockets for a plurality of tacks and so formed as to permit the lower ends of the tacks to follow said grooves below the fingers when the tacks are fed to the tack pockets to position them with their points and heads against the walls of said grooves in inclined relation to the plane of the wipers, and drivers movable in substantially perpendicular relation to the plane of the wipers to drive the tacks through the openings in the wipers for securing the margin of the upper in overwiped position.

30. A machine of the class described having, in combination, a pair of wipers mounted for swinging movements to wipe the margin of an upper inwardly over a sole about an end of a shoe, each of said wipers having a plurality of openings extending through it and having secured in fixed relation thereto a member provided with a plurality of driver passages in alignment with said openings and extending in substantially perpendicular relation to the plane of the wipers, drivers mounted in said driver passages, and means for positioning fastenings in such inclined relation to the paths of movement of the drivers as to cause them to enter the shoe in directions inclined inwardly away from the edge of the shoe bottom in response to the movement of the drivers for securing the margin of the upper in overwiped position.

31. A machine of the class described having, in combination, means movable inwardly over the bottom of a shoe to lay the margin of the upper over the sole, a driver movable in a direction substantially perpendicular to the direction of inward movement of said overlaying means to drive a fastening for securing the margin of the upper to the sole, and means for controlling the fastening in such manner as to cause it to be driven

into the shoe in a direction inclined inwardly away from the edge of the shoe bottom by the movement of the driver.

32. A machine of the class described having, in combination, a wiper movable inwardly over the bottom of a shoe to lay the margin of the upper over the sole, said wiper having an opening extending through it, a driver movable inwardly with said wiper and movable in a direction substantially perpendicular to the plane of the wiper to drive a fastening through said opening for securing the margin of the upper in overwiped position, and means for controlling the fastening in such manner as to cause it to be driven into the shoe in a direction inclined inwardly away from the edge of the shoe bottom by the movement of the driver.

33. A machine of the class described having, in combination, means movable inwardly over the bottom of a shoe to lay the margin of the upper over the sole, a driver movable in a direction substantially perpendicular to the direction of inward movement of said overlaying means to drive a tack for securing the margin of the upper to the sole, and means for positioning the tack in such inclined relation to the direction of movement of the driver as to direct it inwardly away from the edge of the shoe bottom as it is driven, the driver having its tack-engaging end face so inclined as to position it in substantially parallel relation to the head of the inclined tack.

34. In a machine of the class described, a pair of wipers mounted for swinging movements to wipe the margin of an end portion of an upper inwardly over a form, said wipers having curved arms extending therefrom and arranged for engagement with each other to assist in guiding them in their swinging movements.

35. In a machine of the class described, a pair of wipers mounted for swinging movements to wipe the margin of an end portion of an upper inwardly over a form, said wipers having curved arms extending therefrom and arranged for engagement with each other to assist in guiding them in their swinging movements, and a wiper holder having curved bearing surfaces arranged for engagement with said arms to assist in guiding the wipers.

36. In a machine of the class described, a pair of wipers mounted for swinging movements about an axis located substantially at the wiping edge thereof to wipe the margin of an end portion of an upper inwardly over a form, said wipers having extensions provided with bearing surfaces curved in arcs concentric with said axis and arranged for engagement with each other to assist in guiding the wipers in their swinging movements.

37. In a machine of the class described, a pair of wipers mounted for swinging movements about an axis located substantially at

the wiping edge thereof to wipe the margin of an end portion of an upper inwardly over a form, said wipers having extensions provided with bearing surfaces curved in arcs concentric with said axis and arranged for engagement with each other to assist in guiding the wipers in their swinging movements, and a wiper holder having bearing surfaces also curved about said axis and arranged for engagement with said extensions to assist in guiding the wipers.

38. In a machine of the class described, a pair of wipers mounted for swinging movements to wipe the margin of an end portion of an upper inwardly over a form, said wipers having arms extending therefrom and provided with curved bearing surfaces arranged for engagement with each other to assist in guiding the wipers in their swinging movements, and a wiper holder having curved tongue-and-groove connections with said arms to assist in guiding the wipers.

In testimony whereof I have signed my name to this specification.

JACOB C. JORGENSEN.

the wiping edge thereof to wipe the inner
of an end portion of an upper inwardly over-
a form said wiping having extensions pro-
vided with bearing surfaces curved in arcs
concentric with said axis and arranged for
engagement with each other to assist in guid-
ing the wiping in their swiveling movements.
and a wiping holder having bearing surfaces
also curved about said axis and arranged for
engagement with said extensions to assist in
guiding the wiping.

28. In a machine of the class described,
a wiping member mounted for swiveling move-
ments to wipe the margin of an end portion
of an upper inwardly over a form said wip-
ing having arms extending therefrom and
provided with curved bearing surfaces ar-
ranged for engagement with each other to
assist in guiding the wiping in their swiveling
movements, and a wiping holder having curved
bearing surfaces with said arms
to assist in guiding the wiping.

In testimony whereof I have signed my
name to this specification.

JACOB C. JOHNSON

Witness my hand and seal this 1st day of
November, 1911.

JACOB C. JOHNSON

By _____

Attorney

(Model.)

2 Sheets—Sheet 1.

G. W. COPELAND, M. BROCK & J. E. CRISP.
LASTING MACHINE.

No. 244,714.

Patented July 19, 1881.

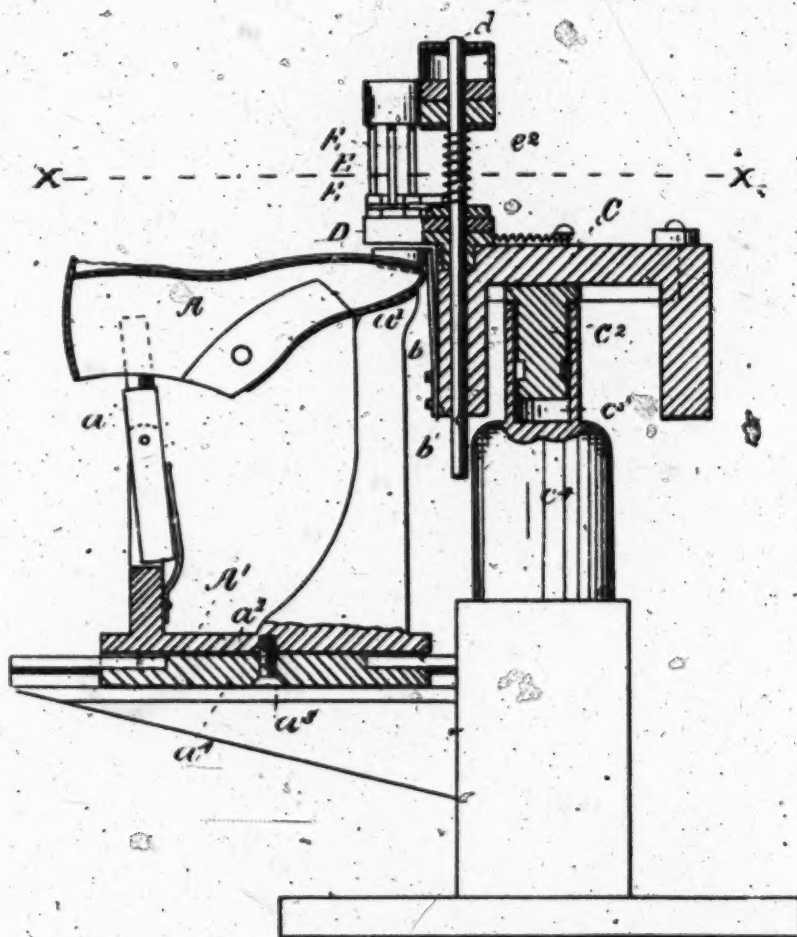


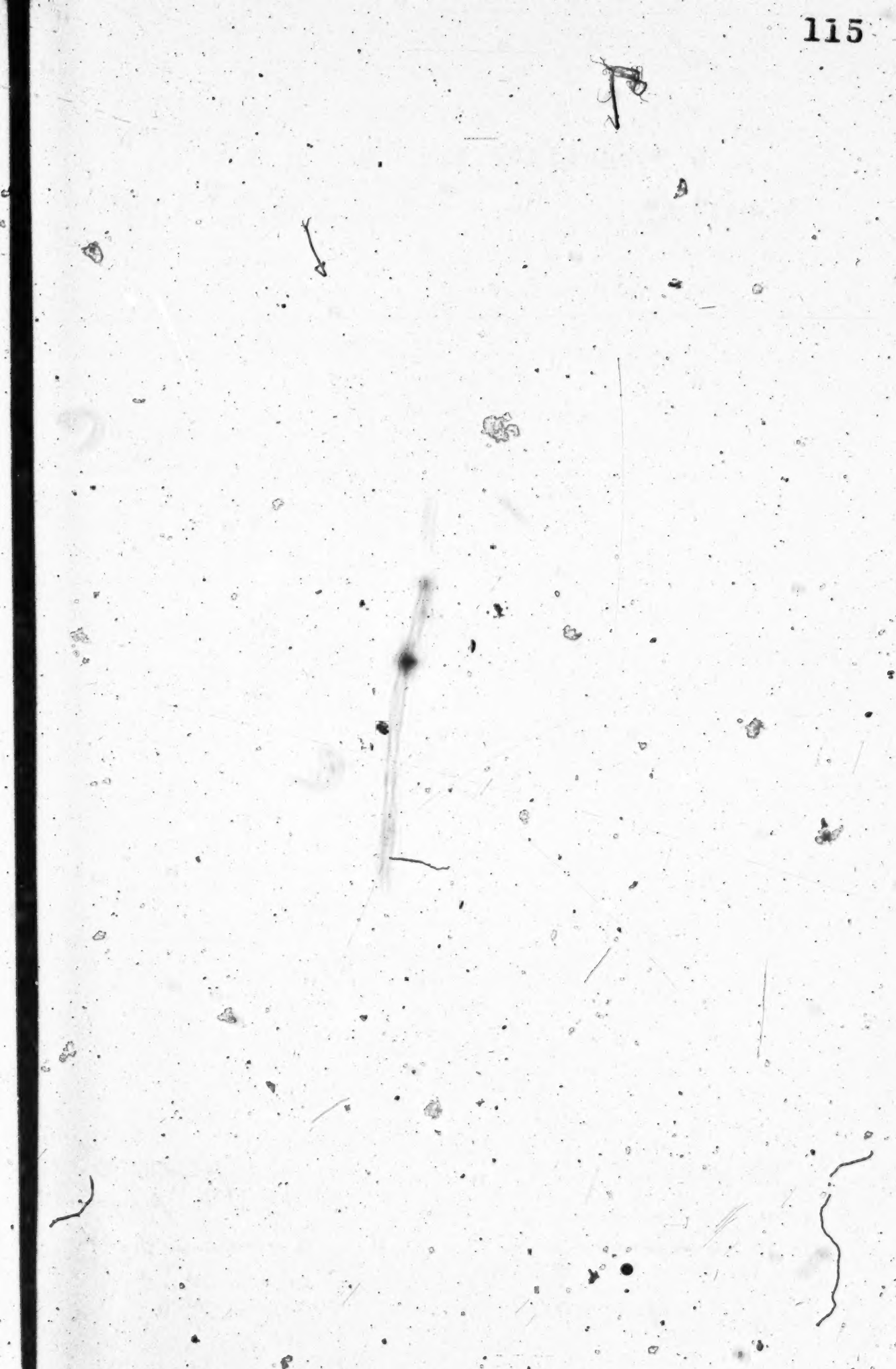
Fig. 1.

WITNESSES

Frank H. Parker
 A. D. Raymond

INVENTORS

G. W. Copeland
 Matthias Brock
 J. E. Crisp



(Model.)

2 Sheets—Sheet 2

G. W. COPELAND, M. BROCK & J. E. CRISP.

LASTING MACHINE.

No. 244,714.

Patented July 19, 1881.

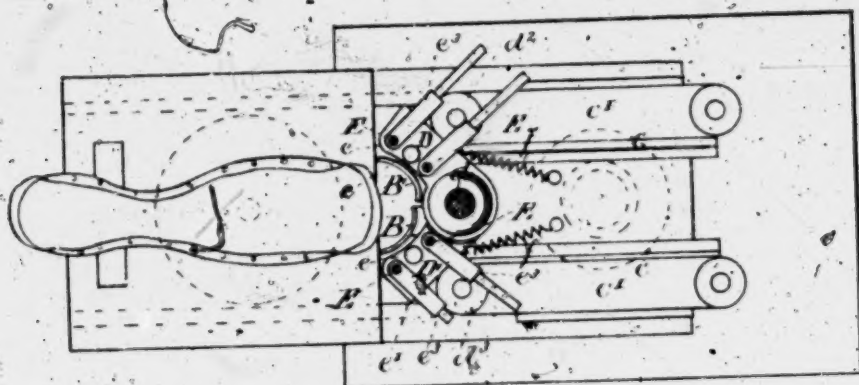


Fig. 2.

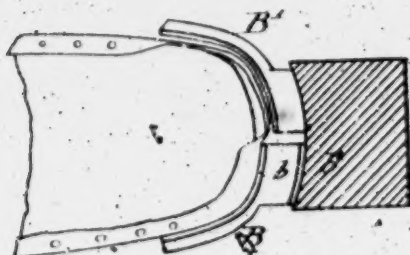


Fig. 3.

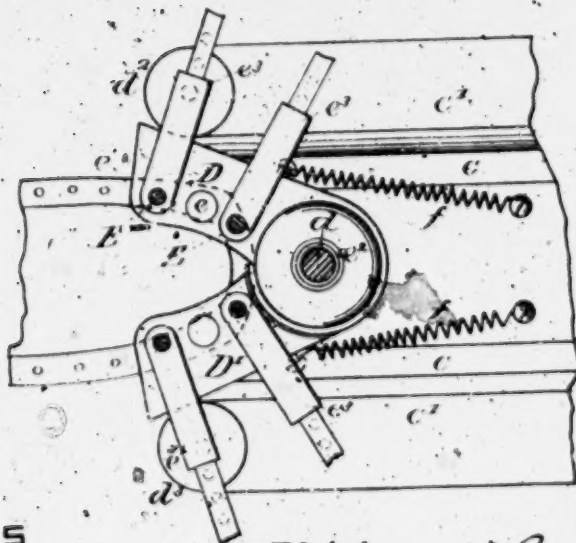


Fig. 4.

WITNESSES

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A. Raymond & Co.

INVENTORS.

Geo. W. Copeland

Matthew Brock
J. E. Crisp

UNITED STATES PATENT OFFICE.

GEORGE W. COPELAND, OF MALDEN, AND MATTHIAS BROCK AND JOSEPH E. CRISP, BOTH OF BOSTON, MASSACHUSETTS; SAID BROCK AND CRISP ASSIGNORS TO SAID COPELAND.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 244,714, dated July 19, 1881.

Application filed June 21, 1881. (Model.)

to all whom it may concern:

Be it known that we, GEORGE W. COPELAND, of Malden, MATTHIAS BROCK, of Boston, and JOSEPH E. CRISP, of Boston, all in the State of Massachusetts, citizens of the United States, have invented a certain new and useful Improvement in Boot and Shoe Lasting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature, in which—

Figure 1 is a vertical section of the machine. Fig. 2 is a plan thereof. Fig. 3 is a detail view, enlarged, representing a portion of the machine hereinafter referred to. Fig. 4 is a plan, enlarged, of a portion of the mechanism below the line *xx* of Fig. 1.

This invention relates more especially to devices for lasting the toe and heel portions of boots and shoes, and it embraces, first, means for holding the upper to the side of the last, about the toe or heel, prior to the folding of the edge thereof upon the surface of the insole; second, folding-plates, or devices for folding the edge of the upper upon the insole, and a gang or group of devices for driving fastenings simultaneously or by a single impulse after the folding-plates have performed their actions, and which may or may not be placed in position to be operated by them; third, the construction and arrangement of parts hereinafter more fully described.

In the drawings, *A* is the last. It is mounted on the heel upon the pin *a* of the jack *A'*, and the toe upon the toe-support *a'* of the jack. The pin and toe support of the jack project outwardly from the bed *a''*, which is pivoted, so as to be revolved, at *a'''* to the sliding plate *a'''*. This sliding plate has a horizontal movement, suitable guides, to and from the lasting-deck.

The appliance or device for holding the edge of the upper against the side and end surface of the last consists in two curved arms, *B B'*, each of which is clamped and conformed to that portion of the side and end of the last upon which it is to operate. They may be made of metal, sufficiently thin to conform by yielding

to the surface of the last; or they may be made of metal, and be lined upon their surfaces with rubber or leather or other material; or they may be made in any other suitable way. They are each mounted on a yielding or spring arm, *b*, and one is arranged to project slightly in advance of the other, so that upon the presentation of the last and upper thereto they shall be brought in contact with the holding device upon one side and corner, and the upper drawn up by pinchers, or in any other suitable way, upon that side and corner immediately before being brought in contact, and while being brought in contact, with said advance holding device; and that portion of the upper having been drawn up and fitted and being held by the holding device, the last and upper are then moved to the other upper-holding device, adapted to act upon the other corner and side of the last, and the upper is pulled up by pinchers, or any other way, immediately before and while being brought in contact therewith, and is held up thereby afterward until the action of the folding-plates; or, in other words, the two upper holding or clamping devices are so arranged in relation to each other and to the jack that that portion of the upper about one corner of the last is first fitted to the end and side surface of the last, and held up by the holding-plate; and that then the portion about the other corner is brought in contact with the second or other upper-holding device and fitted to the last, as explained, whereby the toe or heel of the upper is fitted to the toe or heel end of the last in successive sections. Of course these upper-holding devices may be secured to a moving block or head, as herein described; or they may be stationary, and the last moved in relation thereto; or the last may be stationary and they may be moved in relation to it without departing from the spirit of this portion of our invention.

The next feature of our invention has to do with the folding of the edge of the upper upon the insole at the toe and heel, and the fastening of the edge thus folded to the insole by a group or gang of fastenings driven by a single impulse or simultaneously.

We have represented the jack as capable of being reversed or revolved on a horizontal plane, and we have represented the spring-arms carrying the upper-holders B B' as secured to the block or post B'. This block or post projects downwardly from the plate or bed C, which is adapted to slide horizontally in suitable ways, *c*, in the frame *c'* of the machine, and this frame *c'* is provided with the post *c''*, which enters the socket *c'''* on the standard *c'''*, and furnishes means whereby the framed and appendages may be revolved. One end of the sliding bed or plate carries the toe-lasting plates D D'. These plates are pivoted at their inner ends to the post *d*, and upon the inward movement of the bed or plate are caused to be shut or closed upon the surface of the insole by means of the rolls *d'* *d''* upon the frame *c'*. The outer surface of the plates coming in contact with the rolls as the bed or plate slides inwardly, causes the plates to be closed. The folding-plates are provided with a series of holes or nozzles, *e*, which are arranged a little back from the edge of the plates, and in these holes or nozzles a corresponding series or group of drivers, E, are arranged to be reciprocated by any suitable means; and we describe as one the attachment of the drivers to the hinged blocks *e'*, and the use of the rod *d*, in connection with a treadle when operated by foot-power, and a cam or lever when operated by motive power, for reciprocating said blocks. In this event the blocks would be hinged upon the rod *d*, and would be provided a vertical movement.

The spring *e* may or may not be used for returning the blocks to their normal position in connection with the mechanism herein described for reciprocating them. Each drive-way, nozzle, or hole *e* has opening into it a feed-passage, *e'*, preferably horizontal, by which the fastenings are fed to the drivers.

The fastening we prefer to use is that shown and described in Letters Patent No. 197,609, granted said Copeland and Brock, and dated November 27, 1877, and No. 186,663, granted said Copeland.

The shape of feedway, the device for feeding said strip, and the manner of driving tacks therefrom are shown and described in Letters Patent No. 197,608, granted Copeland, Woodward and Brock, dated November 27, 1877; and in No. 234,854, granted said Copeland and Brock, dated November 30, 1880; and we need not, therefore, further describe the construction and operation of the fastening-driving mechanism, excepting to say that such devices, when used for driving fastenings in this invention, are arranged in gangs or groups, each device having a nozzle, feedway, feed mechanism, and driveway substantially like those described in said Letters Patent, the drivers, however, being arranged to be operated together, or by a single impulse, the feedways being converging, or substantially converging, in direction, and the nozzles preferably being

formed in the folding-plates, and being placed or moved into position in relation to the edge of the last by them.

In operation the upper, being mounted upon the last and secured thereto temporarily at the toe and heel, is, with the last, placed upon the jack, and the upper, last, and jack are then moved to the upper-holding device, and the upper having been fitted to the sides and ends, and being held by the holding device, the edge to be folded being above the surface of the insole and in a vertical position, the upper, last, jack, and upper-holding device are then moved horizontally under the folding-plates, and by their continued movement cause the folding-plates to be closed upon the surface of the insole, thereby folding the edge of the upper thereon, and at the same time bringing the group or gang of driving devices in proper position for driving the group or gang of fastenings. The group or gang of fastenings is then driven simultaneously or by a single impulse.

This description of the operation of the machine answers as well for the heel lasting and securing appliances as for the toe, and the toe having been lasted, the only thing necessary to do to last the heel is to reverse the jack and reverse the frame *c'*, and the other end of the frame, which is provided with the heel-lasting appliances, which are in every respect, excepting that of shape, a counterpart of the lasting devices already described, are brought into the position occupied by the toe-lasting devices, and the heel is then lasted, as above described.

The heel-lasting devices, being secured at the end of the sliding plate C, are by the movement of the toe-lasting plates inwardly caused to assume, automatically, the proper position which the apparatus should bear at the commencement of the lasting—that is, the upper-holding devices are thrown forward and the folding-plates are opened.

We have shown the springs *f* attached to the folding-plates and to the sliding plate for automatically opening the plates; but any other suitable equivalent device may be employed.

Of course we do not confine ourselves in the practice of this invention to the arrangement of the folding-plates and fastening-driving devices herein described, or to the use of fastening-driving devices adapted to drive only the "Copeland tack-strip," so called; but we may use, in combination with the folding-plates, any arrangement of devices for driving fastenings of any description desirable, and may give them any suitable location and movement in relation to the lasting-plates, the essential features being that the devices for driving fastenings shall be so constructed and located that they can be brought in position either by their movement in relation to the last or the movement of the last in relation to them, and the fastenings driven simultaneously, or by a single impulse, while the lasting-plates are

244,714

3

holding the turned-in edge upon the surface of the insole.

The advantages of this invention are that the toe and heel, or either, can be lasted much more rapidly than by the ordinary toe and heel lasting mechanism.

In lieu of reciprocating the drivers, as herein described, we mention the use of a hammer, by which the blocks supporting the drivers may be driven downwardly against the stress of the spring *e*.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a machine for lasting the uppers of boots and shoes, the upper-holding devices B B', one of which is arranged in advance of the other and adapted to operate or be operated upon before the other, all substantially as and for the purposes described.

2. In a machine for lasting the uppers of boots and shoes, the combination of a jack for holding the last having a horizontal movement, upper-holding devices adapted to be brought in contact with the edge of the last at the toe or heel in successive order, and folding-plates for simultaneously folding the edge of the upper held up by the upper-holding devices upon the surface of the insole, all substantially as and for the purposes described.

3. The combination of the last, the jack having a horizontal movement in relation to the upper-holding devices, the upper-holding devices, one arranged in advance of the other, and the lasting-plates secured to the bed, having a horizontal movement, whereby upon a movement of the last horizontally in one direction the upper is clamped to the edge of the

last at the toe or heel, and by the continued horizontal movement in the same direction its edge is folded upon the surface of the insole, all substantially as and for the purposes described.

4. In a machine for lasting the uppers of boots and shoes, the combination of the last, a jack for supporting it, the toe or heel folding plates, and a gang or group of fastening-driving devices supported and adapted to be positioned by the movement of the lasting-plates, all substantially as and for the purposes described.

5. In a lasting-machine for lasting the toes and heels of boots and shoes, a revolving jack having a horizontal movement, a last carried by said jack, and toe and heel lasting devices arranged at opposite ends of a bed or table and adapted to be used successively, all substantially as and for the purposes described.

6. In a lasting-machine, toe and heel lasting devices arranged at opposite ends of a bed or table and adapted to be used successively in lasting the toe and heel of a boot or shoe, all substantially as and for the purposes described.

7. In a lasting-machine, the combination of radially-converging folding-plates, a group of nail-drivers carried by suitable arms or supports which are adapted by mechanism, substantially as described, to be moved to a position coincident with the plates, and tack or nail strip feeding mechanism, as set forth.

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MATTHIAS BROCK.

JOS. E. CRISP.

Witnesses:

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2

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N. LOMBARD. LASTING MACHINE.

No. 524,445.

Patented Aug. 14, 1894.

Fig. 1.

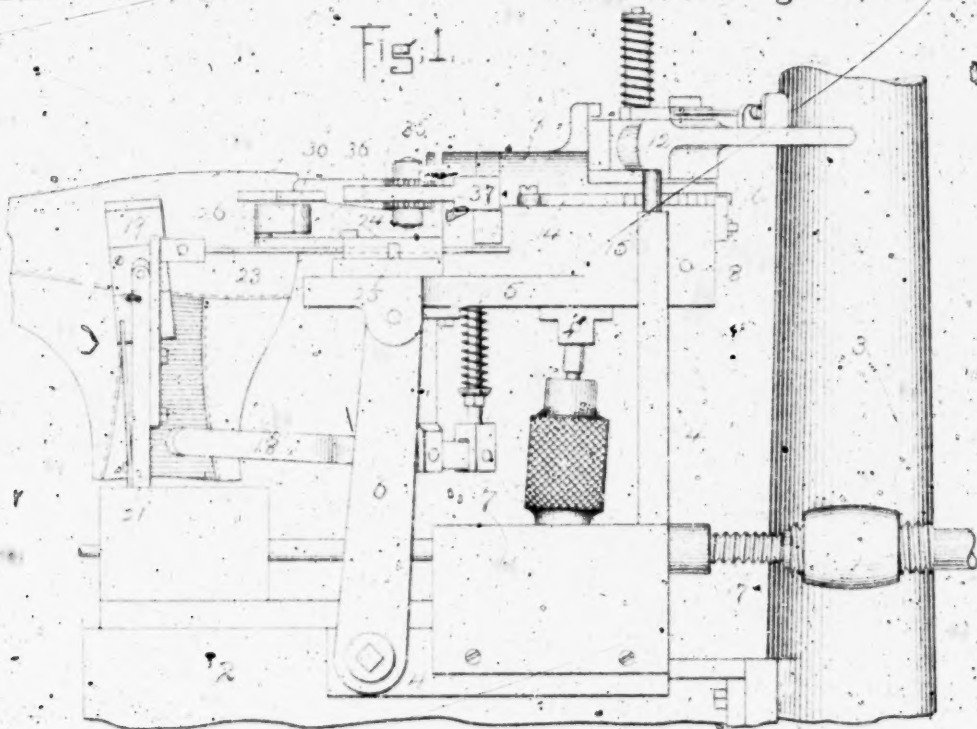
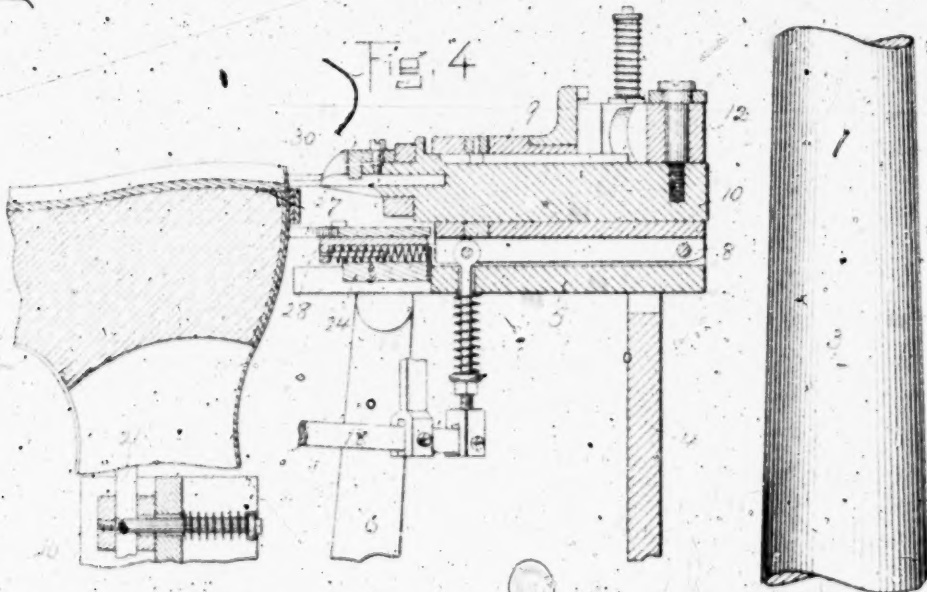


Fig. 4.



WITNESSES.

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Geo F. Wood

INVENTOR.

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(No Model.)

4 Sheets—Sheet 2.

N. LOMBARD. LASTING MACHINE.

No. 524,445.

Patented Aug. 14, 1894.

Fig. 2.

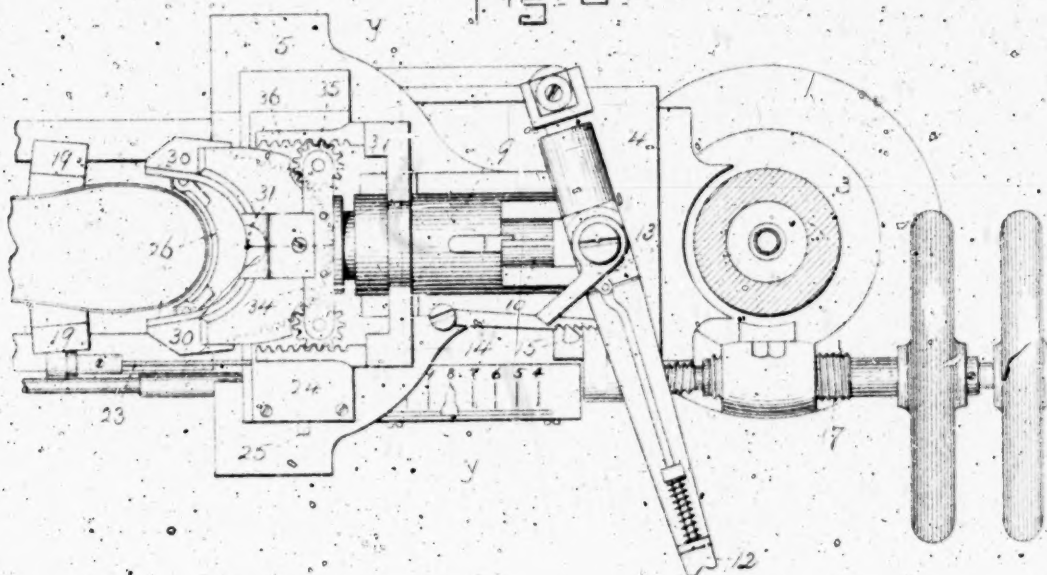
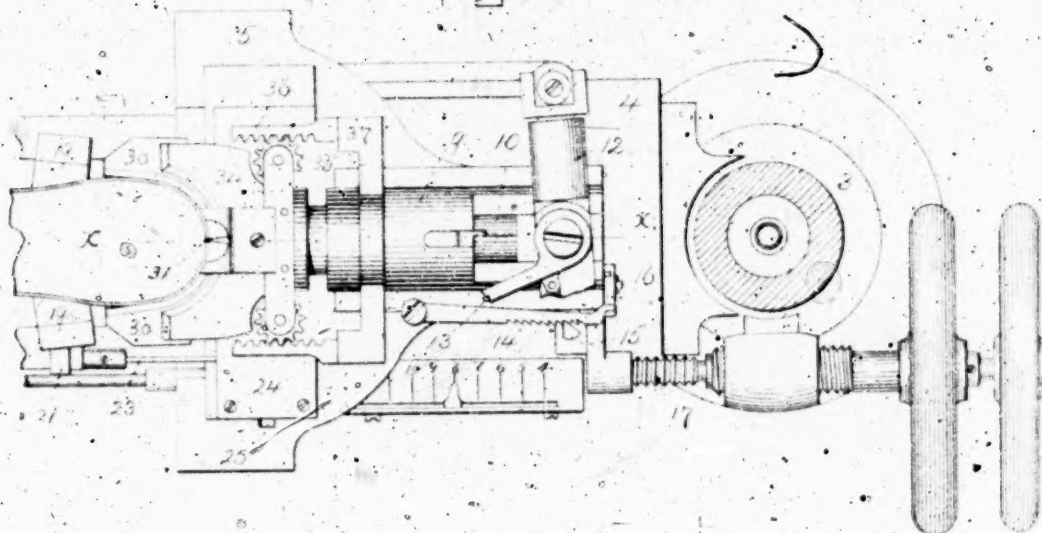


Fig. 3.



WITNESSES

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Geo. F. Wood

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(No Model.)

4 Sheets—Sheet 3

N. LOMBARD.
LASTING MACHINE.

No. 524,445.

Patented Aug. 14, 1894.

Fig. 5

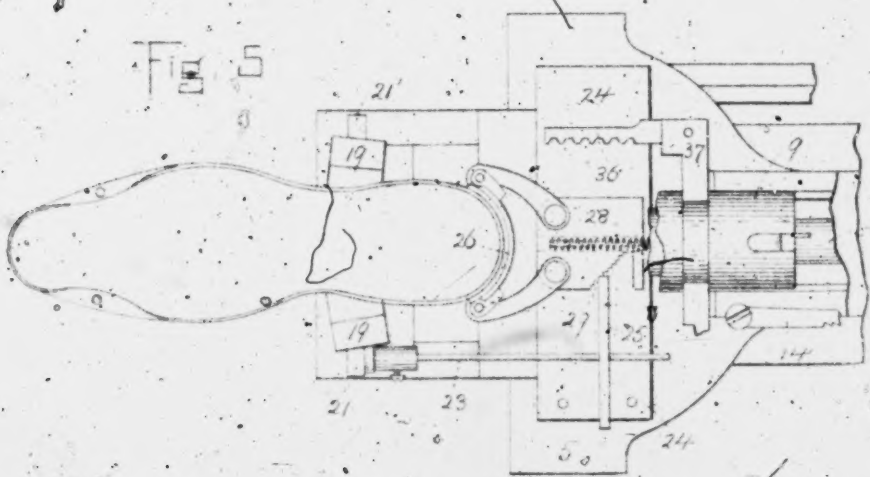
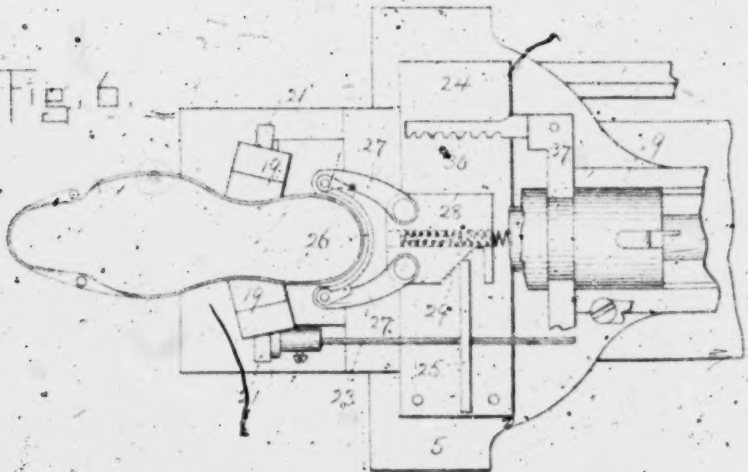


Fig. 6



WITNESSES.

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No Model.)

4 Sheets—Sheet 4.

N. LOMBARD.
LASTING MACHINE.

No. 524,445.

Patented Aug. 14, 1894.

Fig. 8.

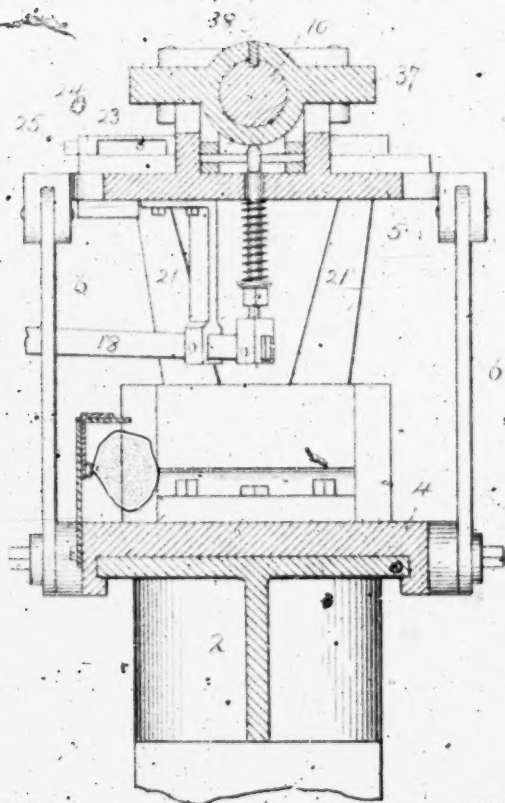


Fig. 7.

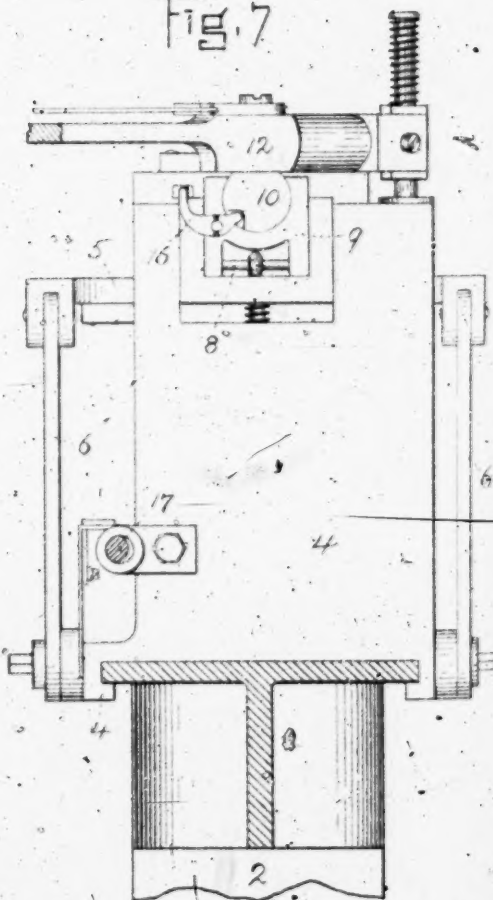
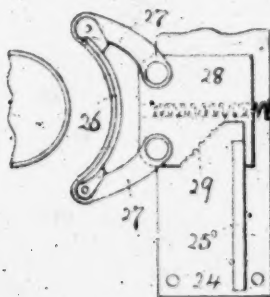


Fig. 9.



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LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,445, dated August 14, 1894.

Application filed November 10, 1893. Serial No. 490,580. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL LOMBARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Heel-Lasting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to lasting machines particularly that portion which includes mechanism for operating upon the heel upper and comprising the several acts of drawing the upper snugly about the last, and crimping and folding it down upon the insole.

My invention in brief consists in a sliding heel carriage upon which are mounted the various elements, which when assembled constitute the machine, as an entirety.

The primary features consist in a rocking cylinder adapted to swing in line with the longitudinal axis of the last, and likewise in a piston adapted for reciprocating and oscillating movement within the cylinder. Said piston is furnished with folding wipers and these are controlled by the same lever by which the various motions are imparted to the piston.

Furthermore my invention is embodied in the employment of a pair of last-holding devices by which the last proper is supported along the quarter and in a sliding plate fitted with a flexible clamping band for temporarily securing the heel portion of the upper against the last.

One of the most important and characteristic features in my present invention comprises mechanism for automatically adjusting the position of the wipers to the varying contours of the heels of boots or shoes, since it is necessary that said wipers shall approximately coincide with the heel at all points, when contiguous thereto, and just prior to the act of lasting the heel portion. This mechanism in brief consists in a variable stop or bolt, which is changed in position dependent

upon the size of the last entered for lasting. Furthermore this stop controls and regulates the distance of the table from the heel portion of the last, after the flexible clamping band is set tightly against the heel. Hence, as the distance of the carriage and the wipers are nearer or farther from the heel, so are the wipers less contracted or more contracted at the time they touch the heel in readiness to perform their duty, since the piston must be moved to bring the wipers about the heel, and such movement acts to fold them toward each other. This mechanism more particularly and in detail consists of a bolt which is positioned transversely on the movable table in the rear of the last and is arranged to engage a plate with a notched edge obliquely of the bolt. Moreover this plate carries the flexible clamping band and slides to and fro with respect to the heel in alignment with the longitudinal axis of the last. Thus it will be understood that the distance between the last-holding devices controls the inward or outward movement of the bolt, while the position of the latter regulates the throw of the table with respect to the flexible clamp. Hence, the table is stopped in some instances sooner than in others and as a result the piston has a greater distance to travel before the wipers reach the heel; consequently the wipers are contracted to a greater extent and are thus adapted to fit a small heel, conversely with a larger heel. Since the position of the bolt is changed for different sizes of shoes, it is evident that the wipers are automatically adjusted for each and every size.

The drawings accompanying this specification represent in Figure 1 a side elevation of heel-lasting mechanism embodying my invention. Fig. 2 is a plan showing the flexible clamping band against the heel with the wipers retracted. Fig. 3 is a similar view with the wipers in readiness to advance over the heel. Fig. 4 is a vertical section on line $x-x$ in Fig. 3. Fig. 5 is a plan of the machine with the wipers removed showing the transverse bolt and notched plate for automatically adjusting the position of the wipers. Fig. 6 is a similar view showing the changes relatively of the several parts when lasting a small

shoe. Fig. 7 is an end elevation of the machine. Fig. 8 is a vertical cross section on line *yy* in Fig. 2. Fig. 9 shows the normal position of the bolt and notched plate prior to clamping the flexible band against the heel.

In said drawings 2 represents the main standard or frame of the machine fitted with an upright post 3 and a sliding carriage upon which are mounted the principal operating elements. Said carriage consists of a base and a vertical end piece 4 which engage the standard, while a top plate or table 5 is positioned above and united thereto by pivotal supports 6-6. Furthermore an adjusting screw-threaded sleeve 7 serves to give the proper angle to said table 5 with respect to the last. Mounted upon the table 5 and pivoted at 8 is a cylinder 9 adapted to rock in a plane coincident with the longitudinal axis of the last; swinging of the cylinder is produced by aid of the lever 12 which raises or lowers the free end. A piston 10 is contained within the cylinder and by means of the operating lever 12 may be caused to reciprocate or oscillate as circumstances require. The cylinder and table 5 move in unison toward or away from the last, and such movement is effected with the lever 12 and a spring-actuated pawl 13 which engages said cylinder. The purpose of the swinging motion of the cylinder is to raise or lower the wipers with respect to the top of the heel, and the spring at the end of the lever 18 serves to force the wipers against said heel and break and flatten down the upper. A toothed rod 14 serves to lock the table 5 in proper position by aid of the stop 15, while disengagement of the two is effected by the piston which is rocked slightly to operate a latch 16, see Fig. 7, and separate the rod 14 from the stop, and so permit the table 5 to slide back.

Change in the position of the entire carriage is effected by the agency of the screw rod 17 and after said carriage has once been positioned, so it continues for the same size of shoe. In connection with the act of lasting I provide two lateral last-holding devices 19 adapted to grip the upper at or near the quarter and these devices likewise clamp the counter at its corners, said devices being loosely hung upon a pin 20, see Fig. 4, furnished with a coiled spring in order to provide for variable adjustment of said devices to allow them to yield as the flexible clamp thrusts the last forward until the toe meets the stop. This obviates the restrictions of a rigid joint which otherwise might cause folds in the leather. From the lever bar 21 of one of these holding devices and adjustably secured thereto is a rod 23 which is parallel with the longitudinal axis of the last and projects through a hollow rectangular box 24 bolted to the table 5 of the carriage. Transversely of this rod is secured a bolt 25 which is contained within the box,

the rod 23 sliding freely through said bolt. From the above description of said elements it will be evident that according to the movement of the last-holding devices 19 toward or from each other, so will the bolt 25 approach or recede from the median line or a plane coincident with the longitudinal axis of the last. Hence the extremity of the bolt is positioned in accordance with the size of the last and is changed in or out from the median line according to the size of shoe introduced between the last-holding devices.

In the act of lasting the heel of a boot or shoe it has been customary to employ a flexible clamp, such as is shown at 26, see Figs. 5 and 6. In the present instance the ends of this clamp are secured to similar arms 27 affixed to a sliding plate 28, this latter being contained within the box 24 before mentioned. One side of the plate is formed with a V-notch while one edge of said notch is toothed or serrated at 29 to serve as variable contact points for the bolt 25. Normally said plate is held in a forward position or advanced toward the last, see Fig. 9, by a spring in order to give free play to the movement of the bolt within the box when the last is introduced.

To seize the edge of the heel upper and force and fold it over the insole, wipers 30 are likewise provided, these, as shown in Figs. 1 and 4, are positioned somewhat above the flexible clamp; their center of motion is the point 31; while the wipers consist of curved jaws their exterior rear curved peripheries being toothed as shown. In order to impart a scissor-like wiping motion to these instrumentalities a transverse arm 31 is secured upon the piston and at each end is mounted a revoluble pinion 35, these latter meshing in racks 36 which form parts of a yoke 37. This yoke is made fast to the cylinder hence reciprocations of the piston cause rotation of the pinions, and an open and shut movement of the wipers is effected. The yoke is connected to the piston by a pin 38, while the piston is slotted, and thus the yoke may be rocked while the piston can reciprocate freely through it.

In connection with the movement of the wipers and the adjustable position of the bolt 25 dependent upon the size of the last is embodied the chief and most characteristic feature of my invention, whereby the relative position of the wipers is automatically regulated, and consequently such, when readiness to pass over the leather of the upper, are practically of the same conformation as the contour of the heel. In other words they will touch the heel at all points and such adjustment is effected when the wipers approach the heel, the space between said wipers being increased or diminished according to the size of the last then just entered for the purposes of lasting. I shall now explain this adjustment more fully, reference being had particularly to Figs. 2, 3, 5, 6, and 9.

It is to be understood that the position of the last-holding devices 19 and the rod 23 together with the inner extremity of the bolt 25 are practically fixed points for each size of shoe. Further that the box 24 is fastened to the table 5 of the carriage, while the wipers are free to reciprocate above. With these premises I will say that the last in Fig. 8 is placed in position and the holding devices 19 brought tightly thereagainst thus adjusting the bolt to the position shown. Moreover the plate 28 is in the position shown in Fig. 9 the flexible clamp 26 not being in contact with the heel. This plate has free independent movement of its own although it moves with the carriage. The handle 12 is now grasped; the catch 13 moves to interlock with the cylinder, and the table 5 and all the elements thereupon are advanced, this includes the cylinder, piston, box 24, the bolt 25 and the plate 28 with the clamping band 26, as likewise the wipers. This upper part of the carriage or table 5 swings now upon the arms 6 until the band 26 contacts against the heel, when the plate 28 becomes stationary, while the said table 5, bolt 25, and the other co-operating elements still advance, the bolt engaging the serrated edge and forcing the plate 28 and band 26 tightly against the heel. The table 5 of the carriage is now locked in position by means of the toothed bar 14 and stop 15 while the act of lasting now is to take place. The operator is then in readiness to release the catch 13 from the cylinder, and this done he proceeds to move the piston, and this agent now acts to cause the wipers to close together by aid of the pinions and the toothed racks. Oscillating movement may also be given to cause the wipers to break and flatten down the upper upon the insole. This oscillation affects the piston, wipers and their actuating elements, to wit:—the pinions and toothed racks, the latter forming part of the yoke 37.

From the above description it will be observed that the wipers do not advance and consequently do not change their position relatively to each other until the clamping band 26 is firmly locked against the heel. This forcing home of the band 26 will, it is seen, take place at different times consequent upon the position of the bolt 25 with respect to the serrated edge 29 of the plate 28. That is, in some instances when the shoe is small, the bolt, extending farther in, will engage the plate sooner, the result being that the carriage and wipers are not permitted to advance so near to the heel, as when a larger shoe is in process. But inasmuch as the wipers are farther from the heel in a small shoe the piston is required to travel a longer distance and thus the wipers are more contracted when they reach the heel than when a larger size shoe is in process. In the latter example the bolt being more retracted the carriage, wipers and piston are allowed to approach nearer the heel and are closer to the

heel at the time the bolt engages the plate 28 which act serves to set the band 26 firmly against the heel. Hence it will be understood that the piston moves only a short distance before the wipers reach the upper, as a consequence they are wider apart, but in any event they always approximate in shape the heel to be lasted, since the bolt and the serrated edge of the plate 28 are adjusted relatively to produce this result. Hence large or small, narrow or wide, as the last may be, the wipers are automatically adjusted to conform to the heel contour when contiguous thereto and this adjustment takes place every time a last is entered, since the bolt is advanced or withdrawn, while the variable stop thus created changes the position of the carriage from the heel and the wipers are being adjusted, while the piston is being advanced; hence they reach the heel in a position which causes them to touch, at all points of the heel simultaneously. The advantage attending this adjustment of the wipers are evident: All springs are obviated, while each change is effected positively and without thought from the operator. Heretofore the wipers required constant individual attention.

What I claim is—

1. In a lasting machine the combination with a heel-clamp, and lasting wipers, of a bolt for variable adjustment, levers to grasp the last, and connections from the levers to the bolt, whereby insertion of the last between said levers automatically adjusts the bolt which regulates the movement of the wipers and causes them to reach the heel in a more or less contracted position, substantially as and for purposes explained.

2. In a lasting machine the combination with last-holding levers, and a bolt carried thereby, of a notched plate adapted to reciprocate to and fro with respect to the last, a heel clamp affixed to said plate, a pair of folding wipers, and means to bring the bolt against the said plate and thus regulate the position of the wipers at the time of contact with the heel, substantially as set forth.

3. The combination with a lasting carriage, a pair of folding wipers, and a bolt mounted on the carriage but adjustable transversely to and fro of the median line of the last and regulated by the size of the last, of a toothed plate independently movable to engage the bolt, a pair of folding wipers, and mechanism to bring the bolt in contact with the toothed plate to stop the carriage and thus regulate the position of the wipers when they reach the heel, substantially as described.

4. In combination with last-holding levers, a carriage to support lasting appurtenances, a bolt transversely of the last and mounted on said carriage, a rod extending through said bolt and attached to a last holding lever, a heel clamp, and a toothed plate, the latter to engage the bolt which serves as a variable stop for the carriage, substantially as specified.

5. In a lasting machine the combination with a movable carriage, a sliding piston thereon, folding wipers actuated by the piston, and a bolt adjustable transversely with respect to the last, of a pair of last-holding levers, a rod to connect the bolt therewith, a heel clamp, a spring-actuated toothed plate having independent movement on the carriage, and means to advance the carriage and cause the bolt to engage the toothed plate, substantially as set forth.

6. In a lasting machine the combination with a movable carriage, a rocking cylinder, a piston to reciprocate therein, and a pair of folding wipers actuated by the reciprocations of the piston, of a sliding plate having movement independent of the carriage, a heel clamp affixed thereto, and a bolt transversely on the carriage and serving to contact with the plate to produce variable throw for the wipers, substantially as explained.

7. In combination with a movable carriage, and stationary last-holding levers, a bolt transversely of the last, mechanism interconnecting said levers and bolt by which said bolt moves simultaneously with said levers, a sliding plate carrying a heel clamp, and means to cause the bolt to contact with the plate at points varying in distance from the median line of the last to limit the travel of the carriage toward the heel of the last, substantially as specified.

8. In a lasting machine a movable table, means for locking the same, a rocking cylinder, a piston thereon, and a pair of folding wipers at the extremity of said piston, combined with a yoke the arms of which have rack-teeth, revoluble pinions which interconnect said rack and wipers, and a lever to reciprocate the piston, substantially as stated and set forth.

9. In a lasting machine, a movable carriage, means for moving and locking the same, a pair of folding wipers, a heel-clamp upon the carriage to serve as a stop, a pair of last-holding levers, and mechanism which interconnects the last-holding levers with the heel-clamp, and thereby limits the travel of the carriage toward the heel, such travel to be dependent upon the varying width of the last at its point of contact with the last-holding levers, substantially as described.

10. In a lasting machine the combination with a sliding carriage, its upper table, the swinging cylinder, and reciprocating piston notched at one end and furnished with last-appurtenances at the opposite end, of a toothed bar, a stop, and a latch which engages the piston and upon oscillation of the piston separates the bar from the stop to release the table, substantially as explained.

11. In combination a movable table, a swinging cylinder thereupon, a piston, its lever, means to advance the cylinder and piston together or the piston alone, wipers carried upon and actuated by the piston, a toothed plate movable on the table, and a heel clamp secured to the toothed plate, together with a bolt carried on the table, and means for adjusting the bolt transversely with respect to the longitudinal axis of the last, said adjustment to be dependent upon the width of the shoe then in process of lasting, substantially as stated.

In testimony whereof I affix my signature in presence of two witnesses.

NATHANIEL LOMBARD.

Witnesses:

H. E. LODGE,
FRANCIS C. STANWOOD.

(No Model.)

2 Sheets—Sheet 1.

A. W. EATON.
LASTING MACHINE.

No. 596,323.

Patented Dec. 28, 1897.

FIG 1

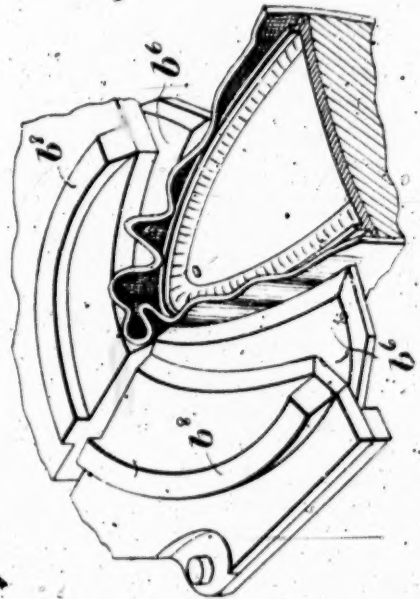
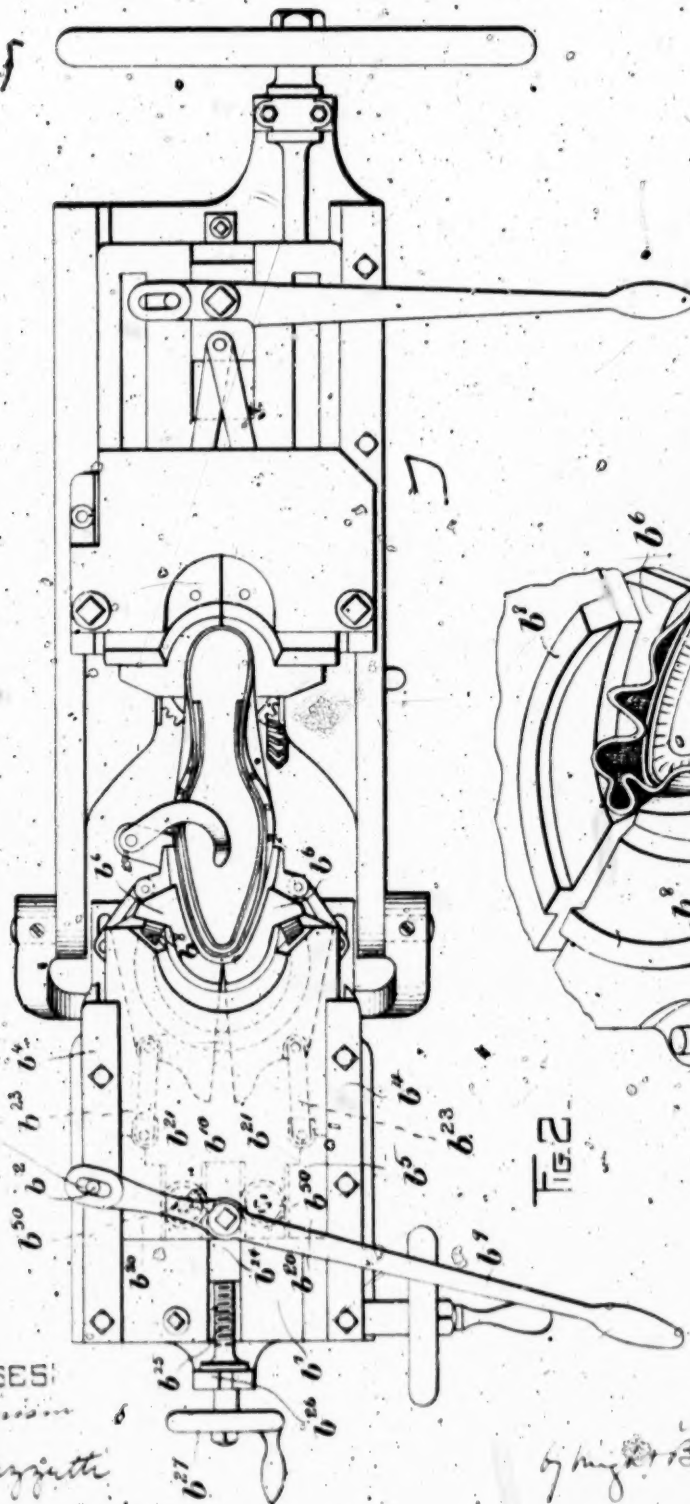


FIG 2

WITNESSES:

P. W. Pizzatti

INVENTOR:

A. W. Eaton
by *Wm. Brown* *Attorney*

(No Model.)

2 Sheets—Sheet 2.

A. W. EATON.
LASTING MACHINE.

No. 596,323.

Patented Dec. 28, 1897.

FIG. 3.

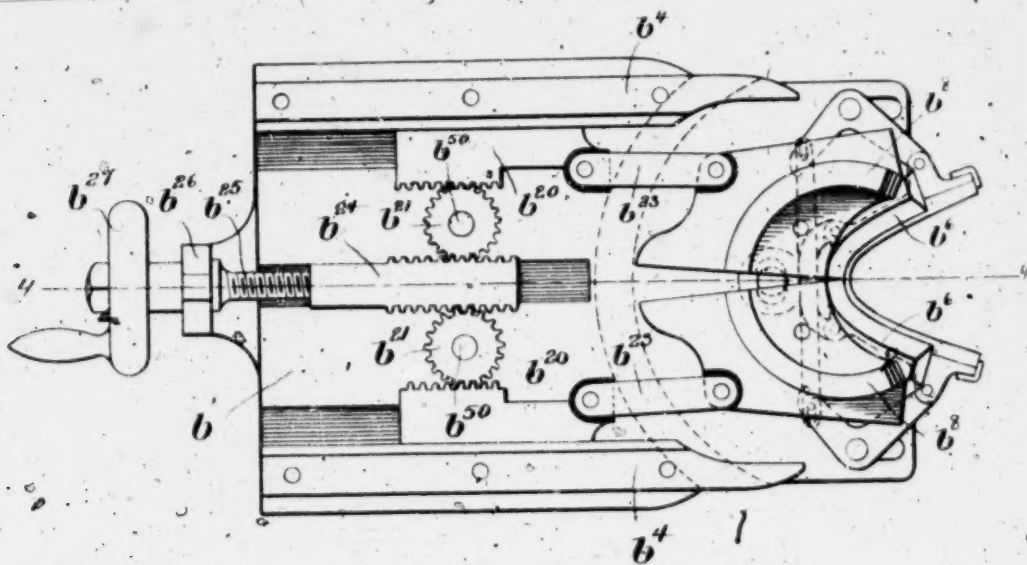
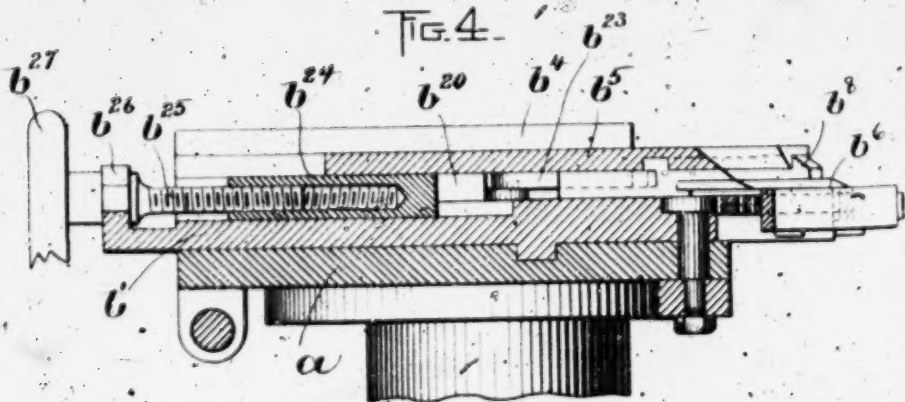


FIG. 4.



WITNESSES:

A. D. Harrison

P. W. Pezzetti

INVENTOR

A. W. Eaton

by Knight, Brown & Quincy
attys

UNITED STATES PATENT OFFICE.

ARTHUR W. EATON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
SEAWER PROCESS LASTING COMPANY, OF SAME PLACE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 596,323, dated December 28, 1897.

Application filed November 11, 1896. Serial No. 611,690. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. EATON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lasting-Machines, of which the following is a specification.

This invention relates to machines for wiping over the heel and toe portions of a boot or shoe upper upon the last upon which the upper is lasted; and it has for its object to provide improved means for adjusting and operating the wipers, which move forward in the direction of the length of the last and at the same time swing inwardly in opposite directions crosswise of the last.

The invention consists in the improvements which I will now proceed to describe and claim:

Of the accompanying drawings, Figure 1 represents a top plan view of a lasting-machine provided with my improvements. Fig. 2 represents a perspective view showing a portion of a last and the upper thereon, together with the toe-wipers. Fig. 3 represents a top plan view of a part of the machine, the wiper-carrier being removed to show the mechanism below it. Fig. 4 represents a section on line 4 4, Fig. 3.

The same letters of reference indicate the same parts in all of the figures.

In the drawings, b' represents a base or support for the wiper-carrier b^5 , the wipers b^6 , and the wiper-operating mechanism herein after described. The base or support b' is preferably pivotally connected with a fixed bed a , so that the path of movement of the wipers may be varied to suit either right or left lasts. This feature, however, is not a part of my invention.

The base or support b' is provided with guides b^4 b^4 , between which is fitted the slide or carrier b^5 , with which the toe-wipers b^6 b^6 are connected. The said wipers have segmental ribs b^8 b^8 engaged with segmental slots in the carrier b^5 , said ribs and slots causing the wipers to swing in circular arcs when the wipers are pressed forward.

b^{20} b^{20} represent sliding racks fitted to move in guides on the base b' and meshing with pinions b^{21} b^{21} , which are provided with studs

b^{20} , fitted to rotate in bearings formed in the carrier b^5 . Said racks are connected by link b^{23} with the wipers b^6 . The pinions b^{21} mesh with a sliding rack b^{24} , which has a screw threaded socket meshing with a screw b^{25} which is journaled in a bearing b^{26} on the base b' and has a hand-wheel b^{27} . When the screw b^{25} is rotated, it causes an adjustment of the wiper-plates toward or from each other as hereinafter explained. When the carrier b^5 is moved endwise by the lever b^9 , (the rack b^{24} remaining stationary,) the pinions b^{21} , moving forward with the carrier, roll on said stationary rack and impart an accelerated forward movement to the racks b^{20} ; this motion being due to the bodily movement of the pinions b^{21} with the carrier b^5 and to the rotation of the pinions on their own axes caused by their engagement with the rack b^{24} . This motion is imparted to the wipers b^6 by the links b^{23} , the wipers being thus caused to move forward with the carrier and to swing inwardly toward each other, the segmental ribs b^8 moving in the segmental slots of the carrier, constituting pivotal connections between the carrier and wipers.

The described forward and inward movements of the wipers cause them to properly wipe the upper over upon the bottom of the last, the toe portion being wiped backwardly or lengthwise of the last, while the side portions are wiped inwardly or crosswise of the last.

It will be seen that the adjustability of the rack b^{24} by means of the screw b^{25} enables the operator to adjust the wipers by swinging them toward or from each other before moving them forward by advancing the carrier b^5 . The wipers may be thus adjusted to lasts of different widths and shapes and may be caused to swing inward over the bottom of the last to any desired extent. The screw b^{25} holds the rack b^{24} at the desired adjustment, and when the carrier b^5 is moved forward the wipers are swung inwardly from the point to which they were adjusted by the said rack and screw. I have therefore provided means for adjusting the wipers toward and from each other before giving them the combined forward and inward movement which wipes the upper over upon the last.

The segmental ribs b^8 on the wipers and the segmental slot in the carrier b^5 , receiving and guiding said ribs, may be termed "interlocked parts" or "guiding members," constituting a pivotal connection between the wipers and carrier, said connection being strong and effective. The relative positions of said members may be reversed, the wipers being provided with segmental slots and the carrier with a segmental rib.

It is obvious that the above-described improvements may be used in connection with wipers formed to wipe over the heel portion of an upper. The carrier-operating lever b^9 is pivoted at b^{10} to the wiper-carrier b^5 and is engaged with the adjustable bed b^7 by means of a pin b^{12} and a slot b^{13} .

It will be seen by reference to Fig. 3 that the inner ends of the operative edges of the wipers meet at the center on which the wipers oscillate. The object of this arrangement is to prevent any opening between the inner ends of the wipers into which the upper-leather may be inserted. By thus excluding the leather from between the inner ends of the wipers I prevent any liability of cutting or marring the leather, which liability would exist if an opportunity were presented for the leather to find its way between the inner ends of the wipers. I also obtain a practically-continuous wiping edge acting alike on the center of the toe of the upper and on the side portions.

I claim—

1. In a lasting-machine, a toe or heel lasting mechanism comprising a base or support, a carrier movable thereon, devices for moving the carrier, wipers pivotally connected with the carrier, mechanism operated by movements of the carrier for giving the wipers an

accelerated motion, and wiper-adjusting devices cooperating with said mechanism, said devices being independent of the carrier-moving devices.

2. In a lasting-machine, a toe or heel lasting mechanism comprising a base or support, a carrier movable thereon, wipers pivotally connected with the carrier, pinions engaged with the carrier to move bodily therewith, an adjustable rack mounted on the base between the pinions and meshing therewith, and connections between the pinions and wipers whereby motion is imparted to the wipers.

3. In a lasting-machine, a toe or heel lasting mechanism comprising a base or support, a carrier movable thereon, wipers pivotally connected with the carrier, pinions engaged with the carrier to move bodily therewith, a rack secured to the base, and meshing with the pinions, sliding racks meshing with the pinions, and links connecting said racks with the wipers.

4. In a lasting-machine, a toe or heel lasting mechanism comprising a base or support, a carrier movable thereon, wipers pivotally connected with the carrier, pinions engaged with the carrier to move bodily therewith, a rack secured to the base, and meshing with the pinions, means for adjusting and positively holding said rack, and connections between the pinions and wipers whereby motion is imparted to the wipers.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of November, A. D. 1896.

ARTHUR W. EATON.

Witnesses:

A. D. HARRISON;
P. W. PEZZETTI.

(No Model.)

6 Sheets—Sheet 1.

M. BROCK.
LASTING MACHINE.

No. 601,935.

Patented Apr. 5, 1898.

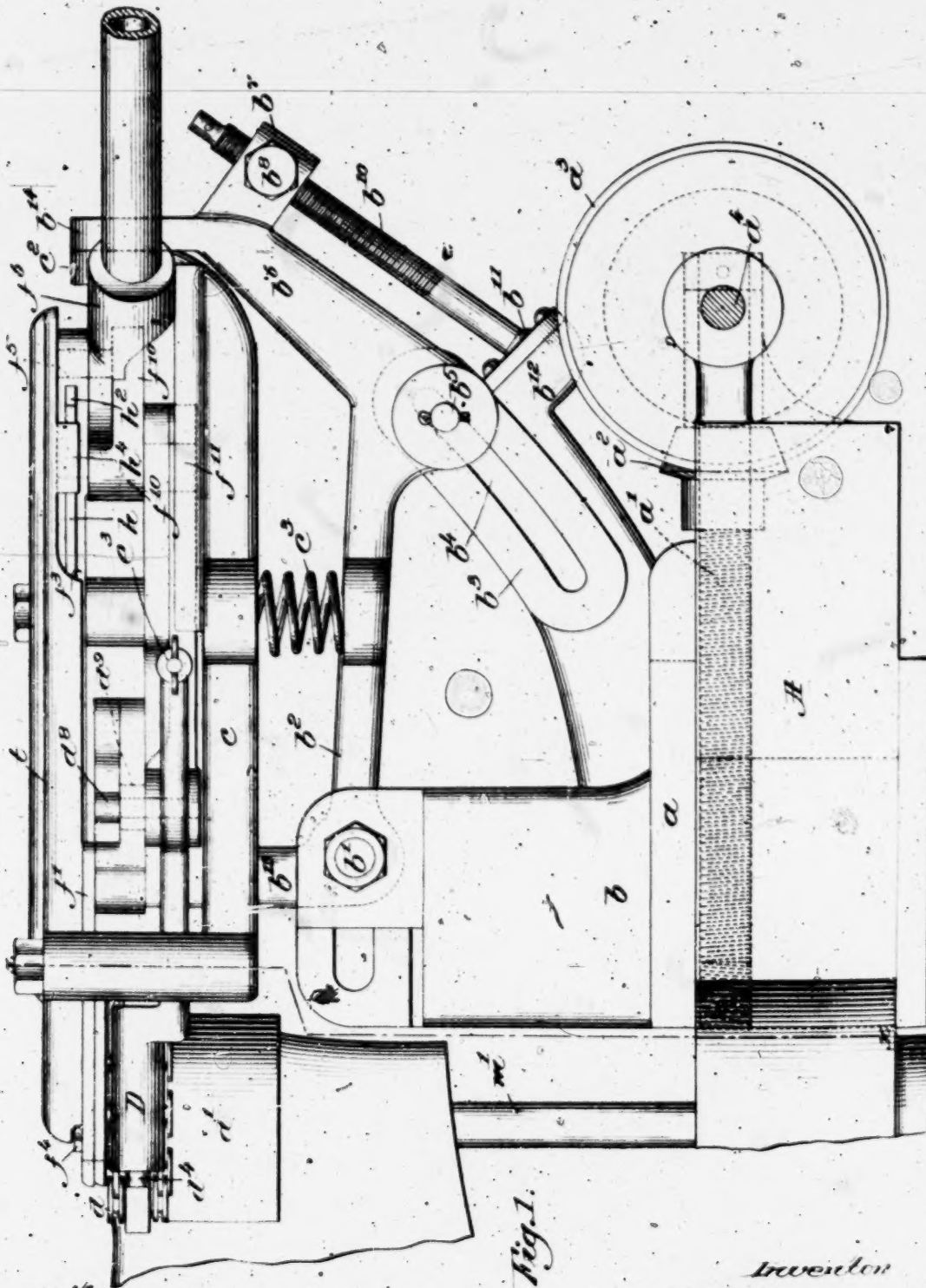


Fig. 1.

witnesses.

Inventon
Matthias Brook

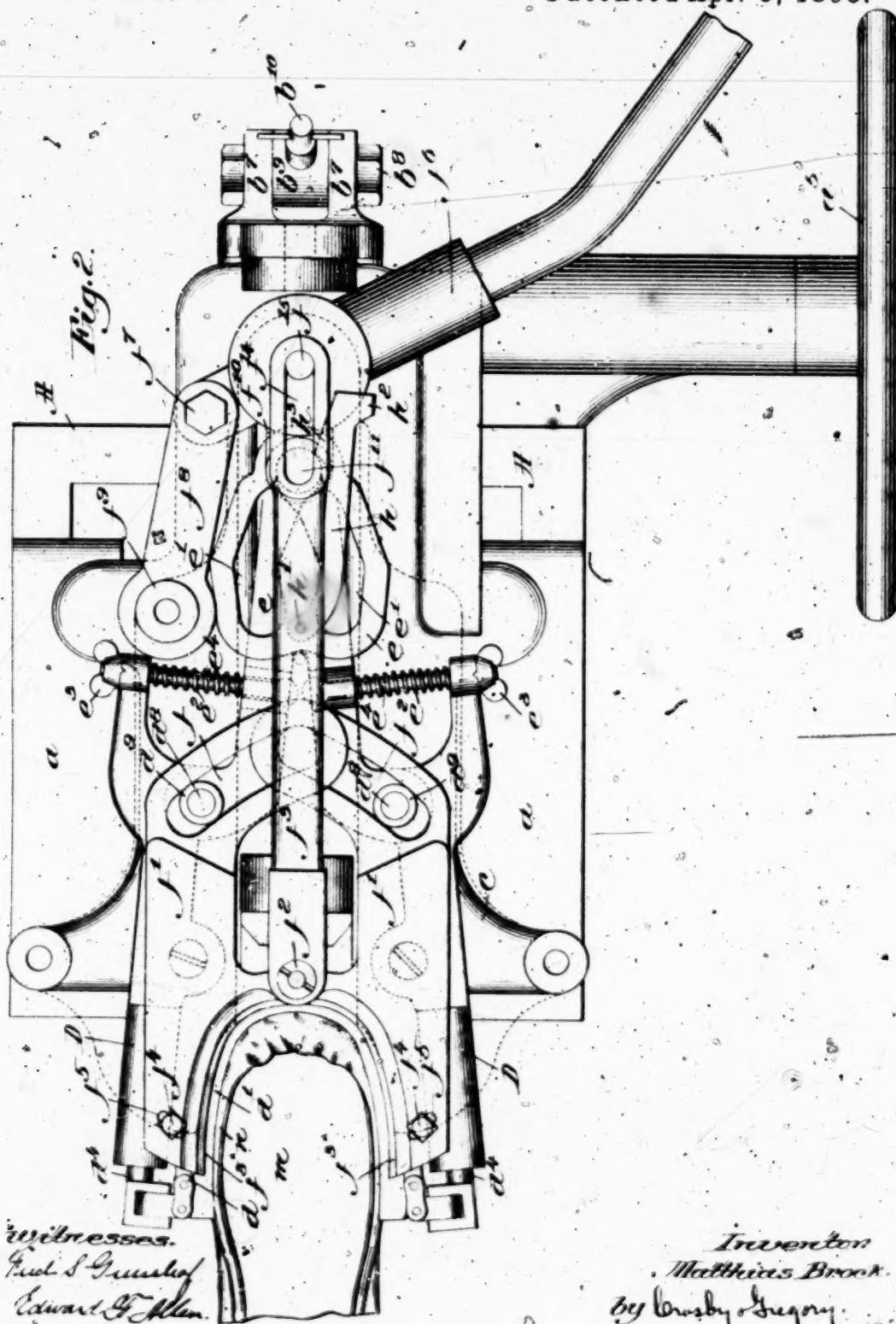
(No Model.)

6 Sheets—Sheet 2.

M. BROCK.
LASTING MACHINE.

No. 601,935.

Patented Apr. 5, 1898.



(No Model.)

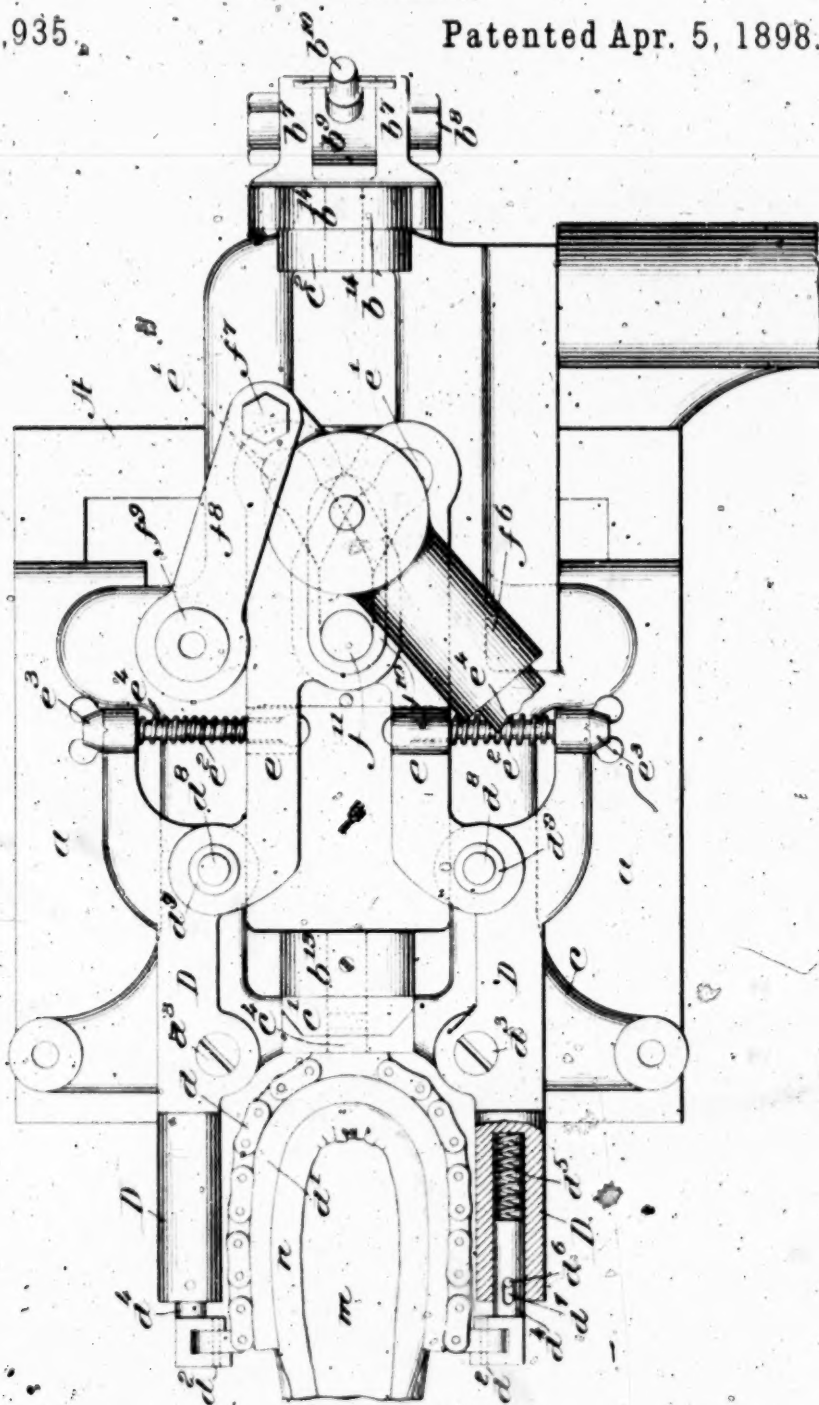
6 Sheets—Sheet 3

M. BROCK.
LASTING MACHINE.

No. 601,935.

Patented Apr. 5, 1898.

Fig. 3.



Witnesses.

Fred S. Grunig
Edward E. Allen

Inventor
Methias Brock
by Crosby & Squire

(No Model.)

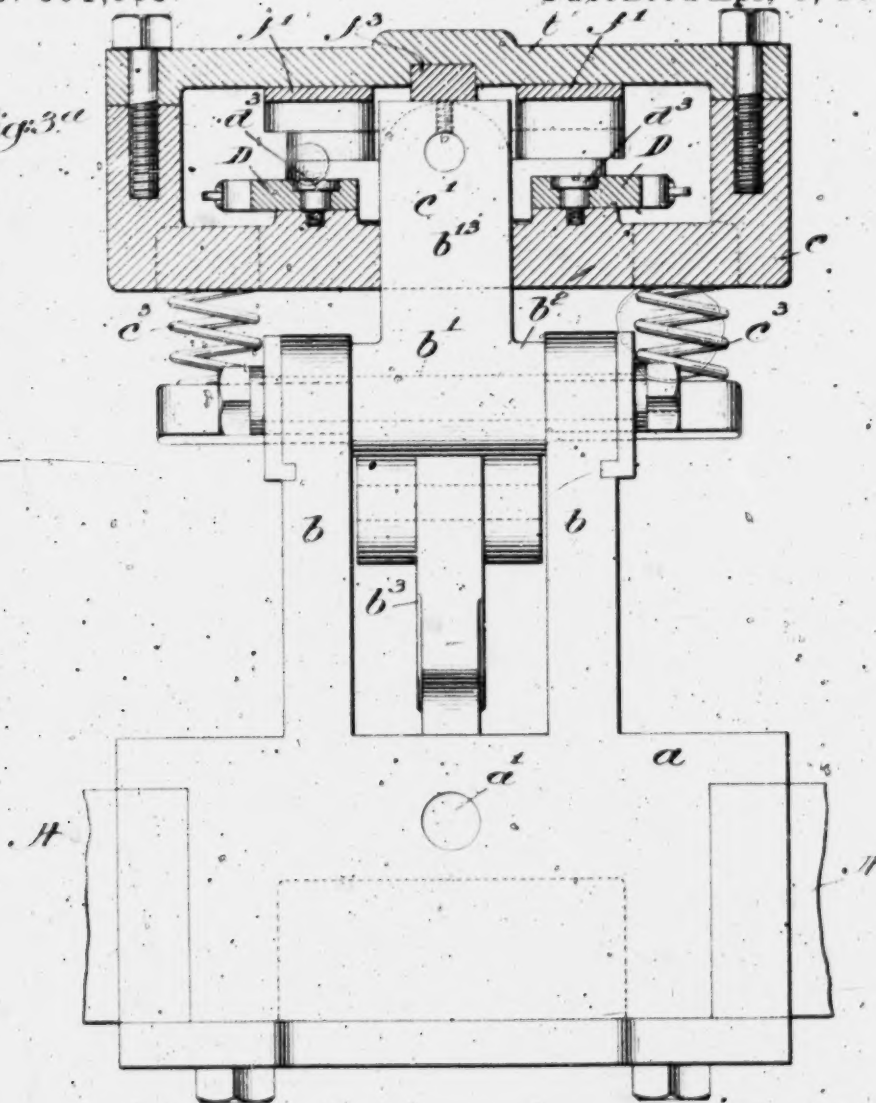
6 Sheets—Sheet 4

M. BROCK.
LASTING MACHINE.

No. 601,935

Patented Apr. 5, 1898.

Fig. 3.



Witnesses:
E. S. Kunkel
Edward T. Allen

Inventor
M. Brock
by Crosby & Gregory
attys

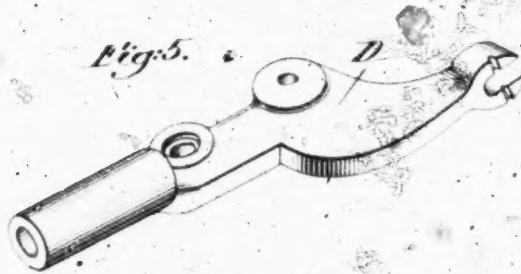
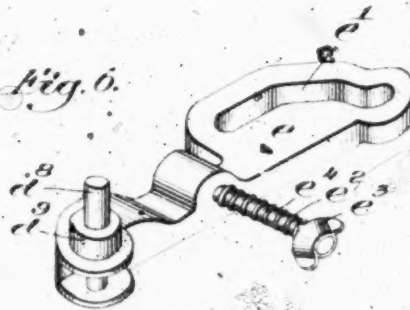
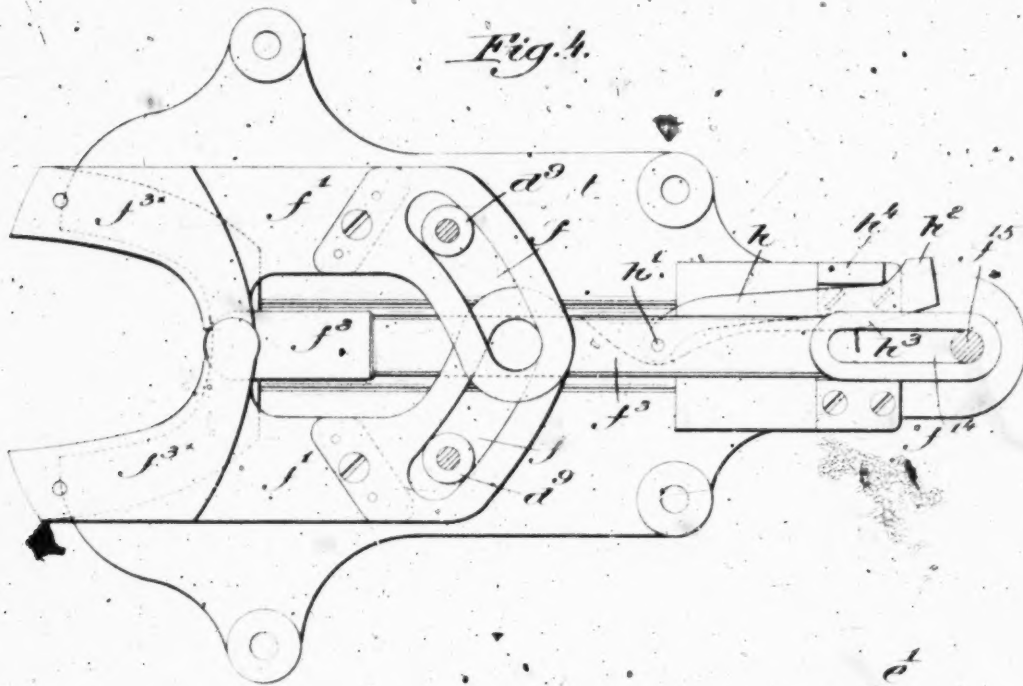
(No Model.)

6 Sheets—Sheet 5

M. BROCK.
LASTING MACHINE.

No. 601,935

Patented Apr. 5, 1898.



witnesses.

Fred. S. Grinnell
Edward F. Allen

Inventor:

Matthias Brook
by Crosby & Gregory

(No Model.)

6 Sheets—Sheet 6.

M. BROCK.
LASTING MACHINE.

No. 601,935.

Patented Apr. 5, 1898.

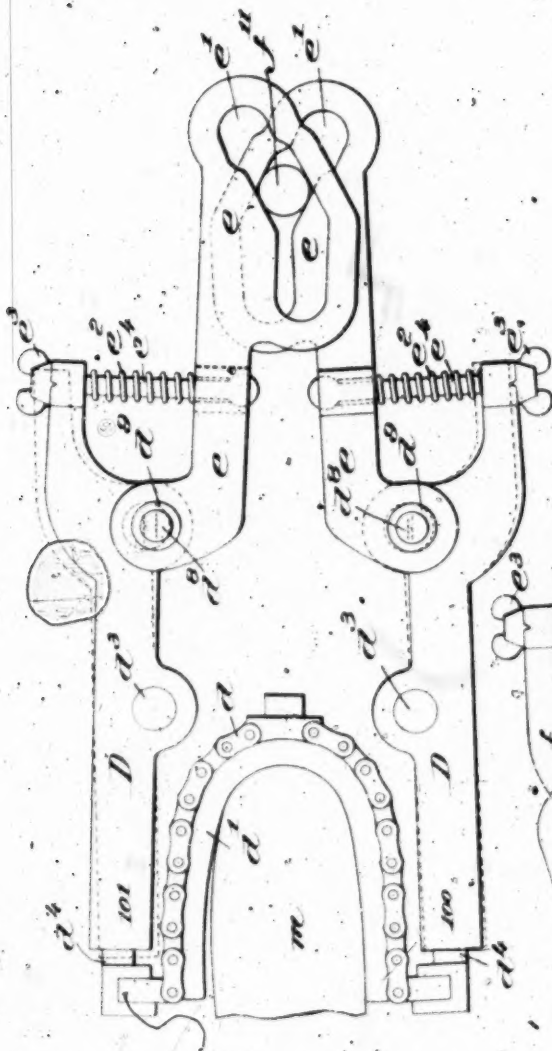


Fig. 7.

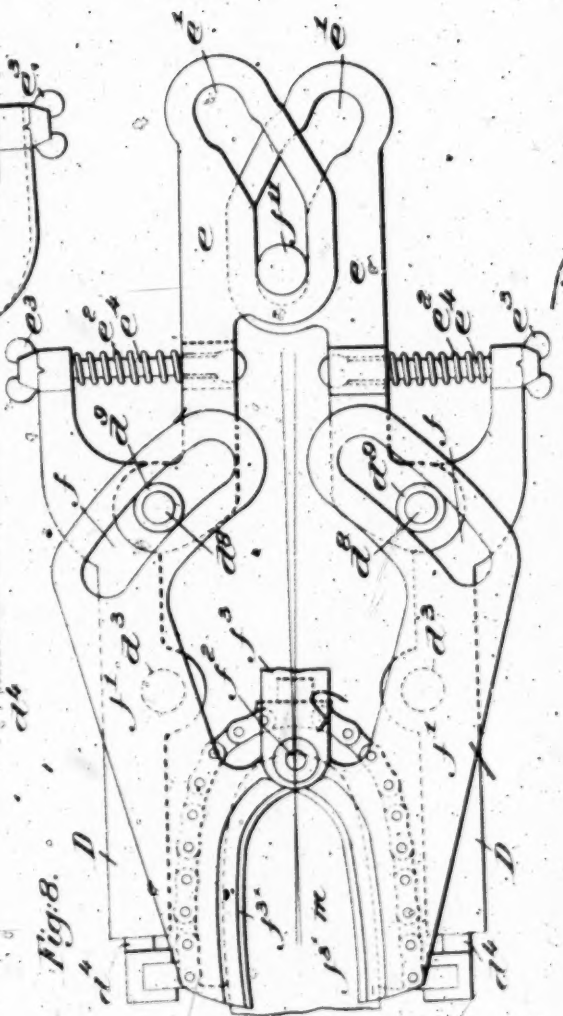


Fig. 8.

Witnesses.

Fred. S. Grunlof
Edward F. Allen

Inventor
Matthew Brock

by Crosby & Sugan
Attys.

UNITED STATES PATENT OFFICE.

MATTHIAS BROCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE CONSOLIDATED & MCKAY LASTING MACHINE COMPANY, OF PORTLAND, MAINE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 601,935, dated April 5, 1898.

Application filed February 14, 1896. Serial No. 579,281. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

My invention relates to lasting-machines of what is known as the "plate" or "wiping" type, wherein the leather or other material is wiped over and upon the last and the inner sole thereupon, as distinguished from what is known as the "step-by-step" type of machine, having nippers or pincers to grasp the material and pull or stretch it over and about the last.

Lasting-machines of the former or plate type are usually provided with heel and toe wipers in the form of wiping-plates, which prior to my invention have, so far as I am aware, been given a fixed and uniform relative opening-and-closing movement—that is, said wipers always start from the same relative positions and move into the same relative positions regardless of the shape, size, or width of the last. If a wide last is used, it is evident the wipers in their closing movement will meet the leather earlier in their movement and will therefore when stopped in their final position be farther inwardly from the outside or periphery of the last than when a small or narrow last is used. In other words, the wipers when fully closed over a wide last will cover and conceal more of the last and the leather laid over and upon the same than when closed to the same relative positions over a small or narrow last.

Since the uppers or vamps of boots and shoes are usually cut in such proportion to the lasts upon which they are to be arranged as will allow for lapping the edges of said vamps always the same distance over and upon the bottoms of their respective lasts, usually about five-eighths of an inch, it will be clear that the wipers when fully closed over and beyond the turned edge of the vamp on a wide last will have to be returned or "backed off" farther to expose sufficient leather to receive the

tacks than would be necessary with a narrow last.

As the lasts delivered to the operator of a lasting-machine are not of a uniform width, but always of constantly-varying widths, sizes, and shapes, the operator at the present time is required to spend much of his time in backing the wipers off and on and cannot be depended upon to always position them at the same distances in from the outside of the last, so that great lack of uniformity in the driving of the tacks is always found in practice. If the tacks are not driven uniformly in proper position, they will to a greater or less extent interfere with the subsequent sewing or nailing operations for securing the outer sole or heel in position.

The principal object of my invention is the production of a lasting-machine wherein the lasting devices, whether in the form of wiper-plates or otherwise and whether located at the heel, toe, or elsewhere, may be predeterminedly positioned at the same distance from the outside of the last whatever be the shape, size, or width of the last. While it is not essential that this positioning mechanism be automatic in its action, yet I prefer that it be automatic, and in the subsequent specification and in the drawings I shall illustrate my invention in connection with an automatic mechanism.

My invention further comprehends various novel features of construction and operation relating, among others, to a yielding end clasp for the boot or shoe, made to yield in order that it may adapt itself to various shapes or sizes of heels or toes—such, for instance, as a full-rounded heel or a narrow tapering heel—without prior manual adjustment by the operator.

For the sake of clearness and simplicity I will illustrate and disclose my invention in connection with the lasting devices for the heel end of a boot or shoe; but it is to be understood that my invention is not limited to such devices alone, but is applicable to any other of the lasting devices of a machine, as will be apparent to those skilled in the art. In the drawings, Figure 1, in side elevation, shows a sufficient portion of a lasting-machine

embodying my invention to enable the latter to be understood, the hand-wheel and its shaft being broken away; Fig. 2, a top or plan view of the parts shown in Fig. 1 with the top plate removed; Fig. 3, a plan view and partial section of the parts shown in Fig. 2 with the top plate and wipers removed, said view showing what I term the "positioning" devices and means for actuating the same; Fig. 3^a, a vertical section on the dotted line *xx*, Fig. 1, looking to the right; Fig. 4, a detail in under side view showing the wipers and actuator therefor. Fig. 5 shows in perspective detail one of the positioning members; Fig. 6, a similar view of one of the levers for actuating the positioning member; Fig. 7, a diagrammatical view illustrating the operation of the positioning devices, and Fig. 8 a similar view illustrating the change in position of the wipers by the positioning devices.

In the embodiment of my invention selected for disclosure of the same and shown in the drawings, A is a part of the column of the well-known McKay-Copeland machine, or it may be a part of any other suitable or desired support, it being provided, as herein shown, with suitable guideways for the sliding carriage *a*, made longitudinally adjustable in said guideways by a suitable adjusting-screw *a'*, (shown in dotted lines, Fig. 1,) held against longitudinal movement at one end in the column and threaded to and in a stand *b*, bolted or otherwise secured to and movable with said carriage, said screw in the present instance being provided with a beveled pinion *a''*, in mesh with a bevel-wheel *a'''*, fast on the hand-wheel shaft *a''''*, journaled in suitable bearings on the column and provided at its end in position convenient for the operator with a usual hand-wheel *a'''''*. (See Fig. 2.)

The stand *b*, as herein shown, is provided with two vertically-extended arms horizontally slotted at their upper ends to receive the pivot-bolt *b'*, upon which between the said arms is pivoted the plate-holder *b''*, shown as slotted at its rear end at the right, Fig. 1, to receive the curved arm *b'''* from the stand *b*, said arm *b'''* being slotted, as at *b''''*, to receive a pin *b'''''* on the plate-carrier *b''''''*, the latter being provided at its rear end with an upwardly-extended portion *b'''''''*, provided with two rearwardly-extended ears *b''''''''*, between which is pivoted on the bolt *b'''''''''* a nut *b''''''''''*, (see Fig. 2,) tapped to receive the threaded end of an adjusting-screw *b'''''''''''*, suitably connected at its lower end, as by a universal joint *b''''''''''''*, with a lug *b'''''''''''''* on the curved arm *b''''''''''''* of the stand. By means of the adjusting-screw *b'''''''''''* the inclination of the plate-holder *b''* and the parts carried thereby may be adjusted to meet varying springs of last in well-known manner.

The plate-holder *b''* at its opposite ends is provided with vertically-extended ears *b''''* *b'''''*, (see Figs. 1 and 3,) to which is pivoted to rotate about a longitudinal axis the plate *c*,

the pivot-pins passing through suitable ears *c'* *c''*, rising from said plate.

The plate *c* (see Figs. 1, 3, and 3^a) is shown as yieldingly supported against rotation about its longitudinal axis referred to by suitable springs *c''*, interposed between the said plate at opposite sides its said axis and the plate-holder *b''*.

To the front of the ear *c'* of the plate *c*, Fig. 3, I have secured in suitable manner, as by a screw *c'*, the middle portion of the usual clasp-chain *d*, within which is arranged the flexible clasp *d'*, adapted to embrace the heel end of the last with the material thereupon.

The ends of the clasp-chain *d*, and therefore the ends of the clasp secured thereto, are connected in suitable manner, as by the pins *d''*, (shown in Fig. 3,) with the positioning devices *D*, fulcrumed at *d'''* upon the plate *c*, whereby the positioning devices, or either of them, in the present instance of my invention are operated or moved from and by the last through the medium of the heel-clasp *d'* and its supporting-chain.

As herein shown, the clasp-chain *d* is not rigidly connected with the positioning devices *D*, but is connected at its opposite ends with the respective positioning devices through the medium of the sliding pins *d'*, which carry the pins *d''* referred to, and which are arranged to slide longitudinally in suitable sockets in the ends of said positioning devices, springs *d'''* inserted between the bottoms of the said sockets and the ends of the respective pins acting to press the latter normally into their outermost positions limited by the stop-pins *d''''*, passed through slots *d'''''* in the pins. When the clasp is moved forward in usual manner to embrace the heel end of the last with the leather or vamp thereupon, the springs *d'''*, by pushing outwardly upon the ends of the clasp, draw the latter tightly about the narrowest or most-tapering form of heel; but should a last be encountered having a full rounded heel said springs will compress sufficiently to enable the heel-clasp to automatically conform to the fuller heel. A heel-clasp embodying my invention is therefore yielding—that is, capable of automatically adapting itself to full rounded or thin tapering heels without attention on the part of the operator.

The positioning devices *D* at the sides of their fulcrums opposite the points of connection with the heel-clasp have in the present instance of my invention jointed to them at *d''* one of the ends of the positioning-device-actuating levers *e*, which (see Figs. 3 and 7) are provided with angular slots *e'*, (shown in dotted lines, Fig. 3, and in full lines, Fig. 7,) said slots *e'* having each a longitudinal portion adjacent the points of connection of said levers with the positioning devices and a rear angular portion connected therewith, the angular portions of the two slots being extended in opposite angular directions, as shown. Springs *e''* are shown interposed between the

actuating-levers e and their respective positioning devices D , (see Fig. 2,) the springs being limited in their movement by suitable thumb-screws e^3 , threaded upon the ends of limiting-bolts e^2 , carried by the actuating-levers e and extended through portions of the positioning devices D .

The pivot-pins d^3 , by which the actuating-levers are connected with their respective positioning devices, are herein shown as vertically extended and provided with suitable rollers d^2 , which enter the cam-slots f , Fig. 2, in the wiper-plate carriers f' , jointed at f^2 to the common actuator f^3 , shown as a slide-bar, and provided at their inner ends with suitable wipers or wiper-plates f^{3x} , adjustably secured to their respective carriers by the adjusting-screws f^4 , passing through slots f^5 in the said carriers, although it is to be understood that it is within the province of my invention to form what I have denominated as the "wiper-plates" and their "carriers" integral instead of independent, as herein shown.

The slide-bar actuator f^3 is shown as held against lateral vibration or movement by a suitable guideway or recess in the under side of the top plate t , (see Fig. 3²), but is free to move longitudinally therein; said actuator at its rear end (see Fig. 2) being shown as slotted at f^{14} to receive the pin f^{15} , carried by the lever f^6 , fulcrumed at f^7 to the free end of a link f^8 , pivotally connected at f^9 to the plate c . The hand-lever f^6 at its under side is shown as jointed by means of the pin f^{13} to one end of a short link of f^{10} , Fig. 3, the latter at its opposite end being provided with a downwardly-projecting roller-stud f^{11} , which enters the cam-slots e' in the levers e referred to, so that in the present instance of my invention the hand-lever f^6 constitutes the means for actuating not only the wipers, but also the positioning devices through the medium of their actuating-levers e referred to.

Referring now to Figs. 2, 3, 7, and 8, assuming the carriage a , carrying the operative parts described, to be in its rearmost position, a last m , upon which has been previously arranged a vamp or upper n for a boot or shoe, is placed upon the usual supporting-spindle m' , the operation of the machine being then as follows, viz: The operator by rotation of the hand-wheel a^3 moves the carriage a to the left in the drawings to carry the heel-clasp d' toward and to embrace the heel of the last with the vamp thereupon, said clasp operating, as described, to tightly embrace and adapt itself to the form of the heel of the last. The operator now draws the handle f^6 toward him in the direction of the arrow, Fig. 2, causing its pin f^{15} to travel for a short distance in the slot f^{14} of the wiper-actuator f^3 without moving the actuator or its wipers. During the time of this lost motion, however, the roller-stud f^{11} on the link f^{10} , connected with the hand-lever referred to, moves in the angular portions of the slots e' in the levers e and throws the latter out-

wardly, thereby acting through the springs e^2 to move the inner or free ends of the positioning devices, which are connected with the heel-clasp, inwardly toward the sides of the last to cause the said clasp to tightly embrace said last. If the heel end of the last should by reason of its being a right or left last of extreme form stand with its median line in a considerable angular position, one end of the heel-clasp connected with one of the positioning devices—for instance, the lower one, (marked 100,) as in Fig. 7—will contact with one side of the last before the other end of the clasp and other positioning device (marked 101) reach the opposite side of the last, so that when one of the positioning devices 100 is thus stopped in its movement by contact with the last the stud f^{11} , following in the slot e' of the lever e of said positioning device and being unable to move it farther, will follow the path of said slot and thereby act through the slot e' of the other lever e to move said other lever and its connected positioning device 101 until the latter has been swung inwardly to meet the opposite side of the last, such position being indicated in dotted lines, Fig. 7. Thus it matters not what may be the angle of the median line of the last the positioning device which first strikes the last will be stopped and the other will continue to move until it also brings up against the opposite side of the last, thereby placing said positioning devices and their roller-studs d^2 in the same relative positions to their respective sides of the last and to the median line of the last, and since the positioning devices stop when and only when they meet the last they must position the roller-studs d^2 always the same distance from the sides of the last whatever the width of the last.

Any movement of the hand-lever after both positioning devices meet the last acts equally upon and to press or clamp both positioning devices tightly against the sides of the last, and after the positioning devices have been tightly pressed against opposite sides of the last should the slots e' cause a further movement of their levers e such additional movement will be taken up by the springs e^2 without further moving the positioning devices.

The shifting of the positioning devices to adapt themselves to different angles of lasts acts through the roller-studs d^2 to automatically shift the wiper-plates also into positions in alinement with the median line of the last, so that they, as shown in Fig. 8, will move forward and back uniformly at opposite sides of the last.

During movement of the hand-lever to operate the positioning devices for shifting the wipers for rights and lefts, as described, the pin f^{15} reaches the end of the slot f^{14} in the wiper-actuator f^3 at or about the time the roller-stud f^{11} reaches and enters the longitudinal portions of the slots e' in the levers e , so that during further movement of the

said hand-lever, when the roller f^{11} traveling in the said longitudinal portions of the slots e' operates no longer to move the levers e , said pins f^{15} , acting against the end of the slot f^{14} , push the actuator f^3 in the direction of its length and toward the last to thereby impart to the wiper-carriers and their wipers a forward movement over the heel end of the last, said wipers as they are moved forward being given an inward or closing movement by the cam-slots f and roller-studs d^b on the positioning devices to cause them to wipe or lay the edges of the vamp over and upon the last and the inner sole thereupon.

Since the starting positions of the wiper-carriers are in all cases fixed and determined by the positioning devices, to which they are connected by the roller-studs d^b , and since the positioning devices when clamped against the sides of the last will of necessity assume always the same positions relatively to said last, the wiper-carrier and wiper must also be brought by the positioning devices always into the same positions relatively to the last, whatever be the width of the latter. In other words, the starting positions of the wipers and their carriers when considered with relation to the sides of the last are always the same, and since the wipers are, as has been stated, always moved the same distance from their starting positions—i. e., since they always have, say, three-quarters ($\frac{3}{4}$) of an inch throw, whatever be the starting-point—it follows that starting from the same points outside a last and moving always a certain distance over and upon the last they will always move to a certain predeterminate position on the last.

If, for example, the wipers are given a movement such as will carry them three-eighths ($\frac{3}{8}$) of an inch over and upon a narrow last, since they start the same distance outside of a wide last they will move three-eighths ($\frac{3}{8}$) of an inch over and upon a wide last. Thus is the present embodiment of my invention the positioning devices by varying the starting positions of the wipers necessarily vary the limits of the inward or lasting movements thereof, and by thus varying the lasting movements of the wipers or lasting devices insure in advance—i. e., predeterminately—the positioning of the said devices at the same distance inwardly from the sides of the last, whatever be the width of the latter, and this position or distance is nevertheless predeterminate, whether such position be regarded as the most inward position of the wipers or any intermediate position into which they may be moved or backed during the return movement of the wipers, for into whatever position they may be moved such position will always be the same relatively to the sides of the last for both wipers or lasting devices, and such position in each case is fixed in advance or predetermined by the positioning devices.

In lasting by machines of this type it is con-

sidered best in all cases that the wipers be first carried completely over and to conceal the overturned portion of the vamp in order to better lay and flatten the overturned edge upon the inner sole, the wipers being thereafter backed off or withdrawn sufficiently to expose the edge of the overturned vamp in order that the tacks may be driven through said smooth and flattened edge into the inner sole and last to hold the upper in its lasted condition. In my invention as herein embodied, to enable the wipers to be thus backed off or withdrawn without moving the hand-lever f^8 the entire length of the slot f^{14} in the actuator f^3 I have provided a suitable device, shown as a latch h , (see Fig. 2,) pivoted at h^1 to the actuator f^3 and provided at the outer edge of its free end with a toe h^2 and at an intermediate point at its outer edge with a projecting shoulder h^3 . (Shown in dotted lines, Fig. 4.)

The top plate t (see Fig. 4) is provided at its under side and adjacent the latch h with a depending projection h^4 , which, as the actuator f^3 is moved forward by the hand-lever, acts upon the inclined face of the toe h^2 of the latch and just before the end of the forward movement throws the said latch inwardly with its lug h^5 behind the pin f^{15} on the hand-lever, which pin during the latter part of the forward movement is in position against the left end of the slot f^{14} , Fig. 2, said latch thus holding the pin f^{15} at the left end of said slot, so that when it is desired to back off the wiper-plates return movement of the hand-lever in a direction opposite the arrow, Fig. 2, will act through the said latch to immediately withdraw the actuator and the wipers to any desired extent. During this return movement of the actuator the latch h is prevented from moving outwardly to its normal position, Fig. 4, to disengage the pin f^{15} by the inner wall of the depending lug h^4 on the top plate referred to, said lug being made of such length as to hold the latch in its position, confining the pin in the slot, as described, for a period of time sufficient to enable the plates to be backed off to the farthest extent needed. When, however, in this return or backing-off movement the toe on the latch clears the depending lug h^4 , the pressure of the pin f^{15} on the shoulder h^3 of said latch, which shoulder is preferably made rounded or beveled for the purpose, throws said latch back or outwardly into its normal position, thereby freeing the pin and permitting it to move to the opposite end of the slot f^{14} in the actuator, where it remains in position for further use. The positioning devices D shown in this embodiment of my invention perform two distinct functions—first, the shifting of the wiper-plates into proper angular positions to enable them to move uniformly inward from opposite sides of a last, whether it be a right or a left last; and, second, they determine the movement of said wiper-plates, so that they may be predeterminately posi-

tioned upon the last at the same distance from the outside or contour thereof whatever be the size or width of the last.

In the embodiment of my invention herein shown the positioning devices—that is, the means which determine in advance the subsequent movements of the wipers—are actuated in advance of and during the lost motion which precedes the movement of the hand-lever operating the wipers.

So far as known to me it is new in a lasting-machine to provide an operating member with connections between it and the lasting devices whereby initial movement of the operating member in one direction takes place without corresponding movement of the lasting devices, and initial movement of the operating member in the opposite direction causes corresponding movement of the lasting devices. This is particularly true when positioning means are employed, as hereinbefore disclosed.

It is obvious to those skilled in the art that my invention herein described as embodied in a mechanism for lasting the heel end of a shoe is equally applicable to the lasting devices employed at the toe end of the shoe, or, in fact, my invention as herein set forth may be applied to advantage in connection with any of the lasting devices employed in the machine.

My invention is not limited to the particular embodiment or construction herein shown, for it is evident the same may be varied without departing from the spirit and scope of my invention.

End lasting mechanism substantially identical with that herein shown and described is disclosed in another application filed by me May 24, 1897, Serial No. 637,850, which latter application contains claims which are generic to mechanisms having the capacity for automatic adjustment to meet variations in swing presented by the ends of lasts, whether rights or lefts.

Having described my invention and without limiting myself as to details, what I claim as new, and desire to secure by Letters Patent, is—

1. In a lasting-machine, the combination with lasting devices and actuating means therefor of means acting automatically to cause said lasting devices in their lasting movement to stop always at substantially the same distance inwardly from the sides of the last, whatever be the size or width of the latter, substantially as described.

2. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means to place said lasting devices in starting positions substantially the same distance from the outside of said last, whatever the size or width of the latter, substantially as described.

3. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means cooperating with the last

or the material thereupon for automatically placing said lasting devices in starting positions at substantially the same distance from the outside of said last, whatever the size or width of the latter, substantially as described.

4. In a lasting-machine, the combination with lasting devices, and actuating means therefor, of means cooperating with the last or with the material thereupon to vary the inward limit of lasting movement of said lasting devices, substantially as described.

5. In a lasting-machine, the combination with lasting devices and actuating means therefor, of means to predeterminately vary the inward limit of lasting movement of said lasting devices to meet varying sizes or widths of lasts, substantially as described.

6. In a lasting-machine, the combination with lasting devices of automatic limit-varying means for automatically varying the inward limit of lasting movement of said lasting devices to meet varying sizes or widths of lasts, substantially as described.

7. In a lasting-machine, the combination with lasting devices, of means cooperating with the side of the last or the material thereupon for predeterminately varying the inward limit of lasting movement of said lasting devices to meet varying sizes or widths of lasts, substantially as described.

8. In a lasting-machine, the combination with end lasting devices and means to shift the same laterally to meet right and left lasts, of means to predeterminately fix the limit of lasting movement of said lasting devices always at substantially the same distance inwardly from the outside of the last, whatever be the width of the latter, substantially as described.

9. In a lasting-machine, the combination with end lasting devices, means to shift the same laterally to meet right and left lasts and means to vertically adjust said lasting devices to meet the difference in spring of the lasts, of means to predeterminately fix the limit of lasting movement of said lasting devices always at substantially the same distance inwardly from the outside of the last, whatever be the width of the latter, substantially as described.

10. In a lasting-machine, the combination with lasting devices and positioning devices to vary the inward limit of lasting movement of said lasting devices, of means to successively operate said positioning devices and lasting devices, substantially as described.

11. In a lasting-machine, the combination with lasting devices and predeterminate positioning devices therefor, of a single operating member connected with and to successively operate said positioning and lasting devices, substantially as described.

12. In a lasting-machine, the combination with lasting devices and predeterminate positioning devices therefor, of a single operating member connected with and to operate both said positioning and lasting devices, and

furnishing a lost motion between the beginning of movement of the said operating member and the beginning of the movement of said lasting devices during which period said positioning devices are operated, substantially as described.

13. In a lasting-machine, the combination with the swinging wipers and actuating means to open and close the same, of positioning means cooperating with the last to swing the said wipers or either of them into starting position prior to movement of the same by said actuating means, substantially as described.

14. In a lasting-machine, the combination with swinging wipers, means to reciprocate the same and cam-surfaces thereon to open and close said wipers, of positioning means cooperating with said cam-surfaces to change the position of said wipers or either of them in addition to the change in position imparted thereto by said actuating means, substantially as described.

15. In a lasting-machine, the combination with the swinging wipers provided with cam-slots and means to reciprocate the same, of positioning devices cooperating with the sides of the last and provided with studs entering said cam-slots, substantially as described.

16. In a lasting-machine, the combination with the swinging wipers provided with cam-slots and means to reciprocate the same, of positioning devices provided with pins entering said slots, and means to move said positioning devices toward and from the sides of said last, substantially as described.

17. In a lasting-machine, the combination with lasting devices and an operating member therefor, of a positioning device connected with and to be moved by said operating member against the last, and a spring interposed between said operating member and positioning device to enable the latter to be moved after the former contacts with the last or the material thereupon, substantially as described.

18. In a lasting-machine, the combination with the swinging wipers provided with cam-slots, and a handle connected with and to reciprocate said wipers, of fulcrumed positioning devices provided with pins entering said cam-slots and operating-levers connected with said positioning devices, and themselves provided with cam-slots to be operated by said handle, substantially as described.

19. In a lasting-machine the combination with lasting devices and actuating means therefor of means for predeterminedly varying the movement of said lasting devices by said actuating means to cause said lasting devices to uniformly operate on lasts of varying width, substantially as described.

20. In a lasting-machine, the combination with lasting devices, of means for actuating the same, said means also acting to automatically vary the lasting movement of said last-

ing devices according to the width of the particular last used, substantially as described.

21. In a lasting-machine, the combination with end lasting devices made laterally adjustable to meet right and left lasts, vertically adjustable to meet different springs of last, and capable of rocking to adapt the same to the inclination of the last-bottom, of means to predeterminedly vary the limit of lasting movement of said lasting devices to meet varying widths or sizes of lasts, substantially as described.

22. In a lasting-machine, the combination with end lasting devices and a clasp, and means to shift the said lasting devices and clasp laterally to meet right and left lasts, of means to predeterminedly position said lasting devices at the same distance inwardly from the outside of said last, whatever be the size or width of the latter, substantially as described.

23. In a lasting-machine the combination with lasting devices, a clasp and means to open and close the same; both said lasting devices and clasp having the capacity of lateral shifting or adjustment to meet the varying swings of right or left lasts, of connecting devices between said lasting devices and said clasp whereby lateral shifting of one causes lateral shifting of the other substantially as described.

24. In a lasting-machine, the combination with lasting devices, and a yielding clasp capable of adapting itself to different shapes of lasts at the end thereof, of means to shift said yielding clasp laterally to meet right and left lasts, means to vertically adjust said clasp to meet different springs of lasts and to roll it to meet the angle due to the roll of the last, substantially as described.

25. In a lasting-machine, the combination with lasting devices, of a clasp and positioning devices cooperating therewith to predeterminedly position said lasting devices at substantially the same distance inwardly from the outside of said last, whatever the size or width of the latter, substantially as described.

26. In a lasting-machine, the combination with the end lasting devices, of the positioning devices cooperating therewith to predeterminedly position said lasting devices at substantially the same distance inwardly from the outside of the last whatever be the size or width of the latter, the chain connected therewith and the clasp arranged on said chain, substantially as described.

27. In a lasting-machine, the combination with end lasting devices, the positioning devices cooperating therewith to predeterminedly position said lasting devices at substantially the same distance inwardly from the outside of the last whatever be the size or width of the latter, the chain yieldingly connected therewith and the clasp arranged on said chain, substantially as described.

28. In a lasting-machine, the combination with the swinging wipers, the reciprocating slotted actuator therefor, an operating-lever and a pin moving in said slot and operated by said lever, combined with a latch adapted to hold said lever in position with said pin at one end the slot in said actuator, and means to release said latch, substantially as described.

29. In a lasting-machine, the combination with lasting devices, an operating member therefor, connections between said operating member and lasting devices, whereby initial movement of said operating member in one direction takes place without corresponding movement of said lasting devices, and initial movement of said operating member in an opposite direction causes corresponding movement of said lasting devices.

30. In a lasting-machine, the combination with lasting devices, and positioning means therefor, an operating member, operating connections between the same and said lasting devices and positioning means, said operating connections automatically causing movement

of said positioning means prior to lasting movement of said lasting devices on movement of said operating member in one direction, but not in an opposite direction.

31. In a lasting-machine, the combination 30 with lasting devices, and positioning means therefor, of an operating member, means connecting the said operating member with said lasting devices and positioning means, said connecting means causing initial movement 35 of said operating member first to operate said positioning means to position the lasting devices prior to effective lasting movement thereof, said connections thereafter connecting said operating member and lasting de- 40 vices whereby the latter are made directly responsive to the movements of said operating member.

In testimony whereof I have signed my name to this specification in the presence of 45 two subscribing witnesses.

MATTHIAS BROCK.

Witnesses:

FREDERICK L. EMERY,
GEO. W. GREGORY.

2

1

3

No. 701,412.

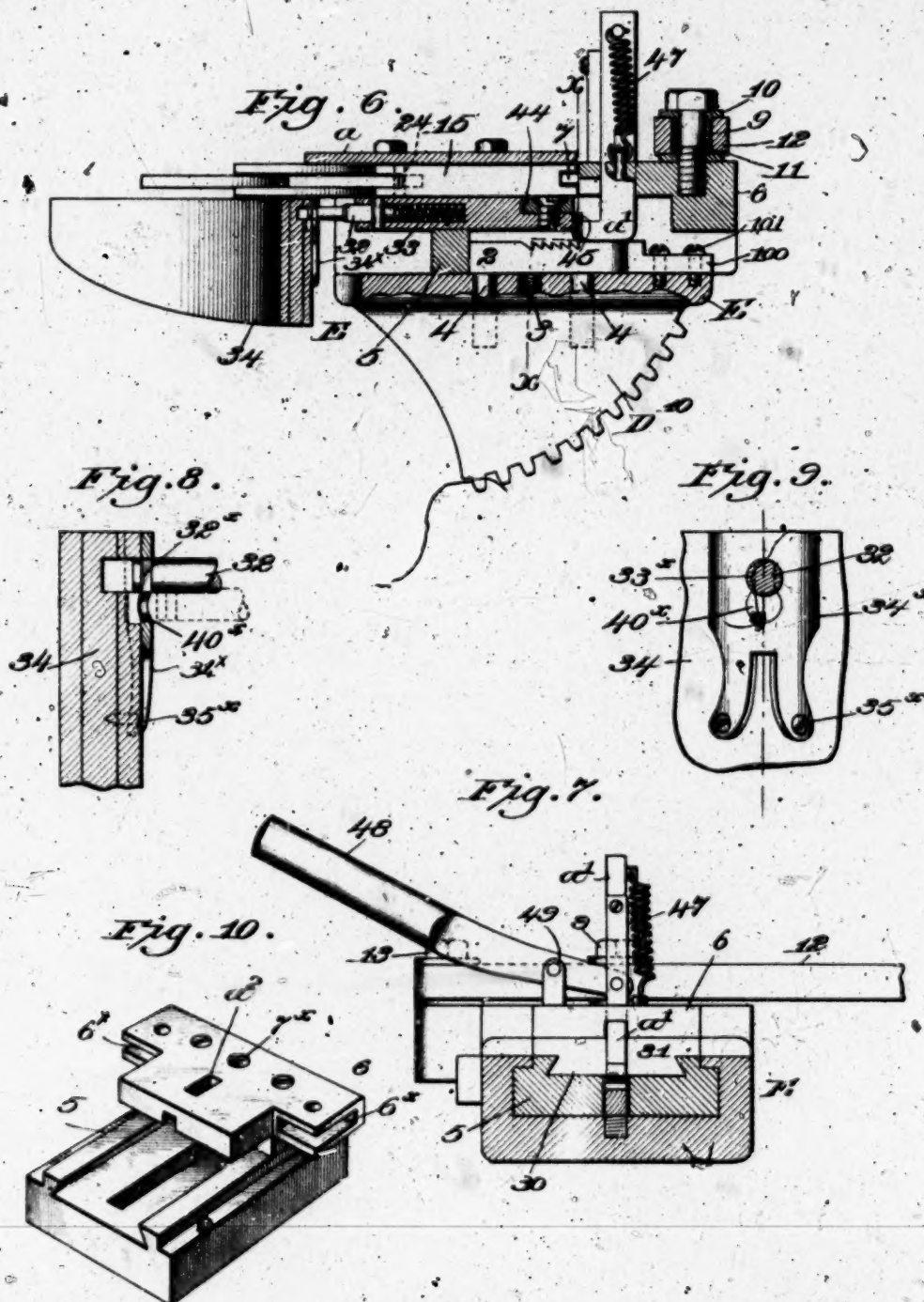
Patented June 3, 1902.

S. SNOW.
LASTING MACHINE.

(Application filed June 25, 1900.)

(No Model.)

3 Sheets—Sheet 3.



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No. 701,412

Patented June 3, 1902.

S. SNOW.
LASTING MACHINE.

(Application filed June 28, 1900.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 3.

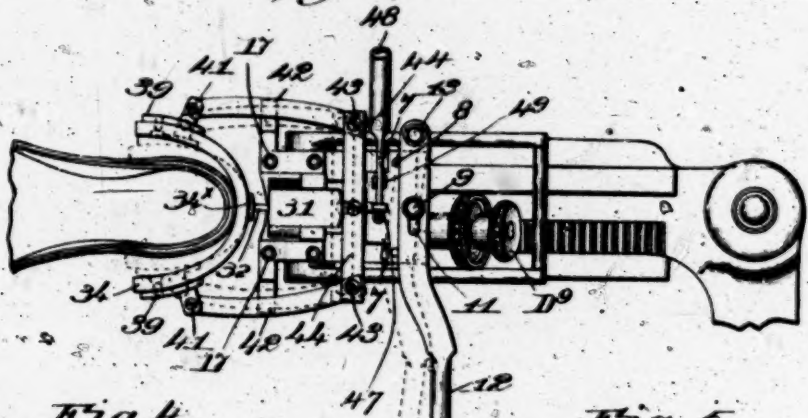


Fig. 4.



Fig. 5.



No. 701,412.

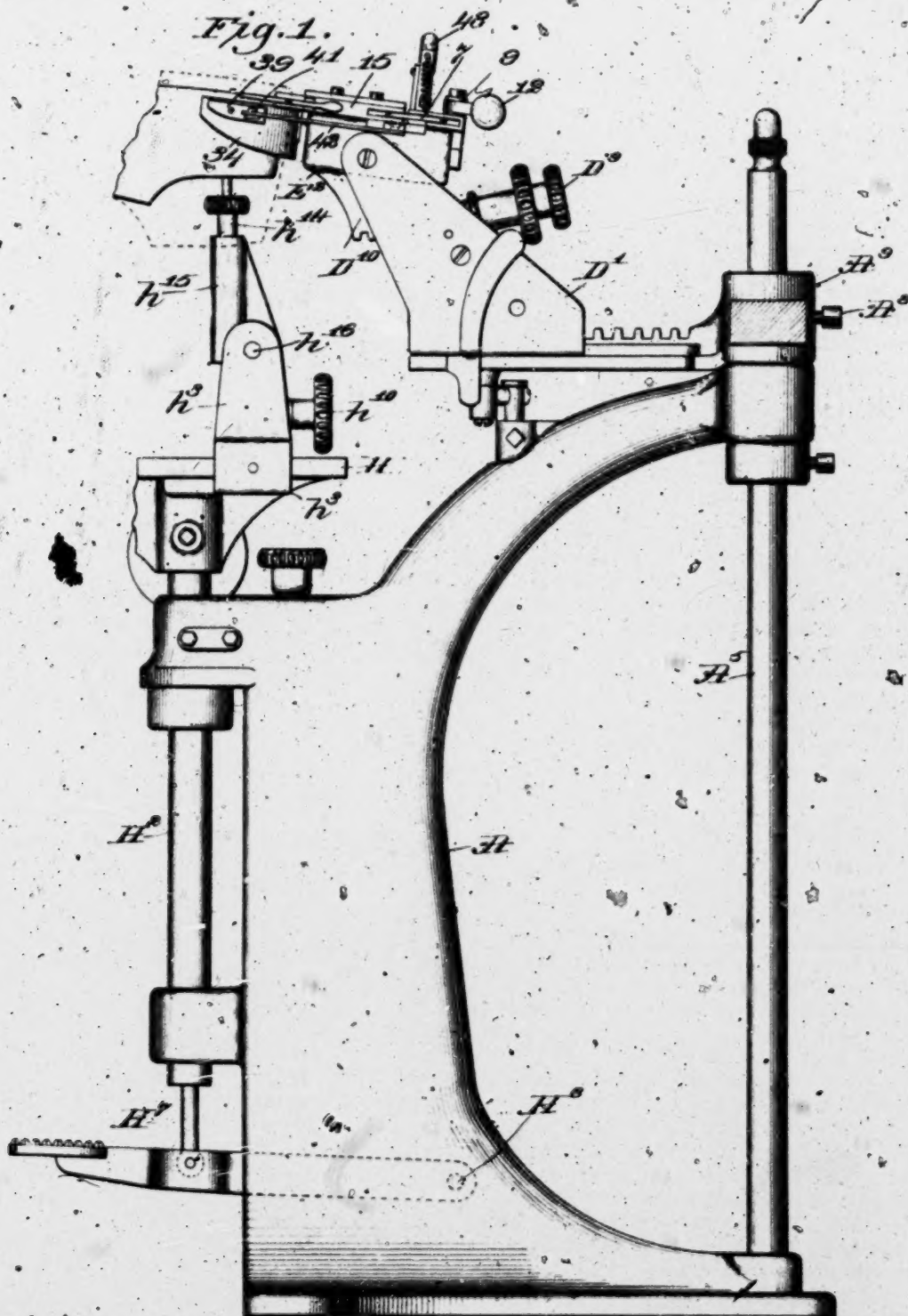
Patented June 3, 1902.

S. SNOW.
LASTING MACHINE.

(Application filed June 25, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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UNITED STATES PATENT OFFICE.

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LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 701,412, dated June 3, 1902.

Application filed June 25, 1900. Serial No. 21,397. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN SNOW, a citizen of the United States, residing at Everett, county of Middlesex, State of Massachusetts, have invented an Improvement in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object to improve the end lasting means in a lasting-machine for boots and shoes.

The invention herein contained is intended as an improvement on the class of lasting-machines represented in United States Patent No. 193,446, dated July 24, 1877. In machines having crimping-jaws made, as described in said patent, to lay the upper over upon the inner sole supported by the last the jaws have to be changed to adapt the machine to right and left lasting. Herein for crimping or laying the upper on the inner sole I employ two sliding plate-carriers provided with crimping-plates detachably secured thereto, and to change from right to left lasting I invert and transpose the said plates—as, for instance, the plate used to meet the upper of a right-foot shoe at the right hand of a line drawn through the last from toe to heel is turned over or inverted when a left-foot shoe is to be lasted and the turned-over plate is transposed, so that it meets the upper at the left-hand side of said line, the other plate of the pair being in a like manner overturned and transposed or changed in position to act on the other side of a left-foot shoe. There is necessarily a difference in the curvature of the concaved acting edges of the two plates used to crimp the upper at the end of the last, and I have found that by inverting and transposing said plates in their carriers right and left foot shoes may be lasted equally well, and this change of position of plates may be easily and quickly made. I have provided the machine with an end clamp composed, preferably, of flexible material, which may be leather, secured at its ends to ears pivoted upon levers in turn pivoted upon an even-bar pivoted upon an intermediate slide. The tipping guideway has roller or

other studs which enter diagonal slots in the plate-carriers, and said carriers are moved forward for crimping and returned into their inoperative position by links connected with a main slide. These slides have coacting with them a coupling, which is effective to insure their movement substantially in unison while the end clamp is being moved into position to embrace the upper at the end of the last, and the clamp having been seated the coupling is disengaged, and thereafter the crimping-plates may be moved forwardly and lay the upper on the inner sole, and this done the crimping-plates are retracted and the clamp is withdrawn from the upper. These two carriages are represented as moved by one and the same hand-lever.

Figure 1 in side elevation represents a sufficient portion of a lasting-machine to enable my invention to be understood. Fig. 2 is a top or plan view of part of the machine represented in Fig. 1 to illustrate particularly my improvements, the parts being shown as in their operative position, part of the cover-plate *a* being broken away. Fig. 3 is a similar view to Fig. 2 with the plate-carriers and crimping-plates removed. Figs. 4 and 5 are respectively plan and edge views of one of the plate-carriers with a plate. Fig. 6 is an enlarged section in the line *x*, Fig. 2. Fig. 7 is a cross-section in the line *x'*, Fig. 2. Fig. 8 is a section through the middle portion of the clamp and its connected locking-plate, it showing part of the clamp-sustainer. Fig. 9 is a view looking at Fig. 8 from the right. Fig. 10 is a detail showing the main slide detached.

In the drawings, *A* represents a column sustaining a spindle *H*¹, jointed to a treadle *H*², pivoted at *H*³. The spindle has at its upper end a head or track *H*, upon which in practice is mounted a carriage *h*¹, having a stud *h*¹¹, upon which is pivoted a lever-arm *h*¹², carrying a last-holding pin *h*¹⁴, adjustable in said lever-arm. The position of the lever-arm is variable to put the last-holding pin more or less out of a vertical line by means of a worm-screw *h*¹⁰. The column also in suitable bearings sustains a rocking spindle *A*⁵, having connected to it by a set-screw *A*² the hub *A*³

of a two-armed carrier, said carrier supporting in practice two carriages D', each carriage having pivotally mounted upon its upper end a guideway E, provided at its lower end with a toothed sector D¹⁰, which is engaged by a suitable worm on a shaft having at its end a hand-wheel D⁹, the rotation of said shaft tipping the guideway upon the carriage to place the crimping-plates to be described in the proper line of travel to properly coact with the shoe to be lasted.

The parts so far described are substantially those illustrated in application, Serial No. 15,183, filed on the 2d day of May, 1900, and no claim is made to any of said before-named parts, and instead of the particular parts so far described I may employ any other equivalent devices commonly used or found in last-making-machines.

The invention to be herein described relates, among other things, to the end clamp and actuating means and to the peculiarly-constructed toe-crimping plates and their carriers, and while I have illustrated my invention as applied to the heel end of a last it will be understood that it is equally applicable to the lasting of the toe, and especially it will be understood that the provision for inverting and transposing the plates used for crimping or wiping the upper over upon the inner sole is of greater advantage in toe than in heel lasting.

In accordance with my invention I provide the guideway E with a toothed block 2, forming part of a coupling, it being sustained yieldingly upon a spring 3 and being guided vertically in its movements by suitable dowelpins 4, represented as entering holes in the guideway. The guideway receives in it a main slide 5, (shown detached in Fig. 10,) said slide being open at its center and provided at its rear end with an upwardly-extended portion 6, suitably slotted at 6^x to receive the ends of like links 7, which surround pins 8 in said ears. The central portion of the part 6 has a threaded hole 7^x to receive a stud 9, provided, preferably, with a roller 10, which in practice enters a slot 11 in a hand-lever 12, pivotally mounted upon a stud-screw 13, fixed to the guideway E. The forward ends of the links 7 are connected by pins 14 with the crimping-plate carriers 15, each having, as represented, a plurality of curved slots 16, which receive roller or other studs 17, erected on the guideway E, said carriers when slid horizontally under the cover-plate a, by the movement of the lever 12, moving in a diagonal line and causing the crimping-plates 18 19, connected with the crimping-plate carriers, to move over the ends of the last in such a direction that the concave edges 20 of said plates act upon the upper to lay the same on the inner sole by an inward movement, which causes the upper to be laid snugly against the edge of the last whatever the conformation of the end thereof on which the inner sole rests. The crimping-plates 18

19, one of which is shown on a larger scale in Fig. 4, present each an acting edge 20. These plates have each notches, one of which engages a stud 21, while the other notch is engaged by a locking device 22, represented for convenience as a lever pivoted at 23 and acted upon by a spring 24, the plate being consequently connected detachably with said carrier, said locking device holding the plate in working position. The acting edges 20 of these plates differ in curvature, and this curvature varies according to the particular shoe to be lasted—that is, different styles of shoes require different styles of lasts and the edge 20 must be correspondingly shaped. These plates in practice are or may be lettered on one side by the letter "R" (see Fig. 4) to represent when the plates are put in with "R" uppermost that they are adapted to last a right-foot shoe and when inverted they are adapted to last a left-foot shoe. I have demonstrated by experiment that plates shaped to properly last a right shoe may be made to last a left-foot shoe, provided the plates are inverted and transposed—that is, suppose the plates were in position with the letter "R" uppermost. Now to last a left-foot shoe it is only necessary to engage the locking device, turn it to release the plates, remove the plates, and take, say, for instance, the plate used to contact with the part of the last at the right-hand side of a line drawn through the last from toe to heel, invert it and put it into the opposite carrier, so that that plate in its transposed and inverted position will act upon a part of the upper at the opposite side of the line drawn from the heel to the toe of the last from that it acted upon when it was used for right-shoe lasting. It will of course be understood that where there is no particular variation in the shape of the last at the inner side of the toe of right and left foot lasts then the plates may be used without change for right and left foot lasting.

The main slide 5 is provided (see Fig. 7) with a dovetailed way to receive, as represented herein, a dovetailed foot 30 of an intermediate slide 31, represented as bored at its upper end next the last-holding pin to receive loosely the shank of a clamp-sustainer 32, made other than round, which enters said bore, the rear end of the clamp-sustainer being acted upon by a spring 33, contained in said bore. The front end of the sustainer 32 is shown as notched at opposite sides, as at 32^x, said notches being entered by the edges 33^x (see dotted lines, Fig. 9) of a plate 34^x, connected by screws 35^x with the middle portion of the end clamp 34, the latter being flexible and composed, preferably, of a plurality of layers of leather. Connecting the sustainer 32 with the clamp detachably enables the clamp if injured or worn to be removed quickly from the machine and another one to be substituted without taking the machine to pieces. The plate 34^x has a peculiar-shaped slot—that is, it has a round end or eye 40^x, out

from one side of which is extended a slot. The round eye receives the end of the sustainer 32, and the engagement of the plate with the sustainer is effected by depressing the plate, causing the sustainer to enter the slot leading from said eye. The ends of the clamp 37 have applied to their outer side ears 39, which are connected with the clamp by suitable screws or rivets. The ears 39 receive stud-screws 41, which are embraced by like links 42, jointed at 43 to an evener 44, pivotally connected with the intermediate slide, so that as said slide is moved the clamp is also moved, the evener permitting the ends of the clamp to be self-adjusting to any variations in shape of the sides of the last. The sustainer made other than round prevents any twisting or rocking movement of the clamp at the point where it is sustained loosely in the intermediate slide. The intermediate slide has suitably fixed to it at its outer or rear ends (see Fig. 6) a tooth 45, which is engaged by the teeth of the block 2, the latter being permitted to rise under the action of spring 3 after the intermediate slide 31 has been moved forward to put the clamp into its operative position. The intermediate slide 31 is moved forwardly by the action against its rear end of a coupling a' , to be described, acted upon by the part 6 of the main slide 5, said coupling being at such time interposed between said main and the intermediate slides, causing the two slides to be moved in unison until the clamp embraces firmly the last and the upper thereon, the coupling acting to depress the block 2.

In operation let it be supposed that a last has an upper thereon and that the inner sole is laid upon the tread of the last and that the last has been put in position on the last-holding pin h'' . In this condition the clamp occupies the position Fig. 3, and the crimping-jaws occupy their inoperative position, with the edges 20 of the plates outside of and not in contact with the upper, and in this condition the lever 12 will occupy its full-line position, Fig. 3. Turning the lever from its full-line position, Fig. 3, into its dotted-line position will start forwardly toward the last both the main and the intermediate slides, the two slides moving substantially at the same speed until the clamp is seated firmly against the upper at the end of the last. As the clamp becomes seated it is thereafter necessary to move the carriers and their plates forward to turn the upper over the inner sole, while the clamp remains substantially at rest, holding the upper firmly, and to do this the main slide must be free to be moved without moving the intermediate slide, and to do this the coupling a' , heretofore referred to, must be raised or moved to uncouple the slides. The coupling a' in the form in which I have chosen to represent it in Figs. 6 and 7 is a bar the shank of which is free to slide vertically in a hole a^2 in a portion of the upward extension 6 of the main slide 5. This bar is

normally depressed in its operative position, as shown in Fig. 6, by a contractile spring 47, one end of which is fixed with relation to the main slide, the other end being fixed to a projection extending from the shank of said coupling. The spring 47 is strong enough to depress the block 2 while the two slides are being moved forward in unison. The coupling, however, may be lifted when desired through the hand-operated lever 48, pivoted at 49. When the lever 12 is being moved from its full into its dotted line position, Fig. 3, the coupling occupies the position Fig. 6, and consequently the end of the coupling acting against the rear end of the intermediate slide 31 moves that slide forward in unison with the main slide and with the carriers having the crimping-plates. When the clamp has been seated, as described, the operator will through the hand-lever 48 lift the coupling to put it in its inoperative position with relation to the intermediate slide, the lifting of said coupling enabling the block 2 to rise and engage by one of its teeth the tooth 45, and he will then pull the lever 12 into the dotted-line position, Fig. 2, and during this movement of said lever the coupling rides over the top of the intermediate slide and only the plate-carriers and the crimping-plates are moved forwardly into the full-line position, Fig. 2, which completes the lasting of the upper clamped about the end of the last.

This invention is not limited to a coupling of the particular form shown when used in connection with the other parts of the machine, for as I believe that I am the first to provide a machine employing a main slide adapted to operate crimping-plates and an intermediate slide having a clamp mounted thereon with a coupling to connect the two slides, the said coupling occupying its operative position when the two slides are moved to seat the clamp upon the upper, and to provide means to thereafter move said coupling into its inoperative position or release it from the main slide, so that the crimping-plates may be further moved to lay the upper over the inner sole on the last, I desire to claim the same broadly without being limited in any way except as in the appended claims.

The crimping of the upper over upon the inner sole and the tacking of the overlaid edge of the upper to the inner sole completes the end lasting, and thereafter the lever 12 is moved from its dotted-line position, Fig. 2, into its full-line position, Fig. 3, and during the first part of this movement the plates are removed off the overlaid upper, and the clamp is then retracted, leaving the parts in their normal position ready to again go through the operation hereinbefore described. As the lever 12 is moved backwardly the coupling when it arrives in position to drop from the end of the intermediate slide is depressed by the spring 47, causing it to meet the toothed block 2 and depress it, compressing the spring 3, and releasing the teeth of

the block from the tooth 48, thus permitting the intermediate slide to be moved backwardly with the main slide, the spring 33 aiding in this return.

5 By the term "coupling" as herein employed I mean to include any device which may be interposed between or made to cooperate with the main and intermediate slides to cause them to be moved in unison, the coupling during this movement occupying what I shall designate as its "normal" or "operative" position, said coupling being capable of being moved into inoperative position whenever the clamp has been seated on an upper on the last, the plate-carriers and crimping-plates thereafter completing their movement, the crimping-plates coming into their operative position. This coupling also, as herein shown, performs another function—
15 that is, it acts to depress the toothed block 2 against its spring 3 while the coupling occupies its normal or operative position and whenever the intermediate slide is to be released to enable it to be moved into its inoperative position.

I have provided the guideway E with a stop 100, connected therewith by suitable screws 101, and said stop forms an abutment for the end of the block 2, thereby relieving
30 the studs 4 from strain.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a lasting-machine, a pair of plate-carriers, two crimping-plates, one for each carrier, said crimping-plates varying one from the other in the curvature of their acting edges, and means for connecting said plates detachably with said carriers that they may
40 be disengaged from one carrier, overturned, and transposed to the other carrier to enable right and left foot shoes to be lasted.

2. In a lasting-machine, a pair of plate-carriers, combined with crimping-plates detachably mounted in said carriers and having each a concaved edge, said crimping-plates differing one from the other in the contour of their acting edges, each plate being capable of being detached, transposed to the other carrier, and inverted to provide for right or
50 left shoe lasting.

3. In a lasting-machine, a plate-carrier slotted at one end, a plate concaved at one edge and notched and inserted in the slot of the plate-carrier, said notch engaging a projection of said carrier, and means acting upon said plate to lock it in the carrier.

4. In a lasting-machine, a plate-carrier slotted at one end, a plate concaved at one edge and notched and inserted in the slot of the plate-carrier, said notch engaging a projection of said carrier, combined with a spring-controlled latch to engage and effect the retention of the plate in the carrier.

5. In a lasting-machine, crimping-plate carriers, attached crimping-plates, a main slide, a lever, and connections between said

slide and said carriers to move the same; an intermediate slide, a clamp mounted thereon, a coupling adapted to be interposed between
70 said two slides, it occupying its operative position when the two slides are moved to seat the clamp upon the upper, and means to thereafter move said coupling into its inoperative position to release it from said main
75 slide that the plate-carriers and their crimping-plates may be further moved to lay the upper over the inner sole on the last.

6. In a lasting-machine, crimping-plate carriers, attached crimping-plates, a main
80 slide, a lever, and connections between said slide and said carriers to move the same; an intermediate slide, a clamp mounted thereon, a coupling adapted to be interposed between said two slides, it occupying its operative position when the two slides are moved to seat
85 the clamp upon the upper, means to thereafter move said coupling in its inoperative position that the plate-carriers and their crimping-plates may be moved to lay the upper over the inner sole on the last, and a device under the control of said coupling to lock said intermediate slide in position, to maintain the clamp against the upper on the last holding the plate-carriers from lasting
95 movement.

7. In a lasting-machine, a slide, a connected clamp, a spring-pressed notched block over which said slide is movable, a tooth on said slide to engage a notch of said block; and
100 means to move said block that it may engage the tooth of the slide, or be made to retire from said tooth as and for the purposes set forth.

8. In a lasting-machine, a flexible clamp to embrace the end of the last, means to sustain the ends of the clamp, and clamp-sustaining means intermediate the ends of said clamp and independent of the means for sustaining the ends of the clamp, said clamp being connected detachably with said intermediate
110 clamp-sustaining means.

9. In a lasting-machine, a flexible clamp having attached to it between its ends a slotted plate, combined with a sliding clamp-sustaining device having slots engaged loosely with said plate to sustain the central portion of the clamp detachably.

10. In a lasting-machine, crimping-plates, carriers for said plates, a slide operatively connected with said carriers, an intermediate
120 slide, a clamp to embrace the end of the last, an evener mounted on said intermediate slide, links connected at one end with said evener and at their other ends with said clamp, means to move the slide connected with said carriers, a coupling to couple the said slides together that they may be moved together until said clamp embraces the upper on the end of the last, and means to then move the coupling to release the slide carrying the clamp while the slide moving the crimping-plates is further moved to meet the upper and lay it over upon the inner sole on the bottom

of the last, and means to lock the clamp in its clamping position while the crimping-plates complete their operative movement.

11. In a lasting-machine, crimping-plates, 5 carriers for said plates, a slide operatively connected with said carriers, an intermediate slide, a clamp to embrace the end of the last, an evener mounted on said intermediate slide, 10 links connected at one end with said evener and at their other ends with said clamp, means to move the slide connected with said carriers, a coupling to couple the said slides together that they may be moved together 15 until said clamp embraces the upper on the end of the last, and means to then move the coupling to release the slide carrying the clamp while the slide moving the crimping-

plates is further moved to meet the upper and lay it over upon the inner sole on the bottom of the last, and means to lock the 20 clamp in its clamping position while the crimping - plates complete their operative movement, and means to depress the locking device to unlock the slide for moving the clamp, that it may be moved backwardly af- 25 ter the completion of the action of the crimping-plates.

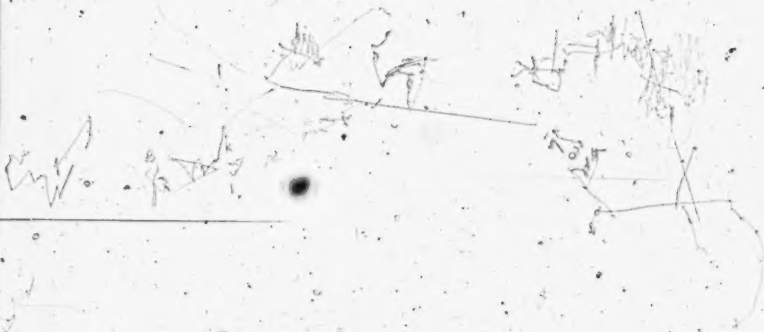
In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

STEPHEN SNOW.

Witnesses:

MARGARET A. DUNN,
MABEL PARTELOW.

170



S. SNOW.
LASTING MACHINE.

APPLICATION FILED SEPT. 5, 1905.

946,708.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 1.

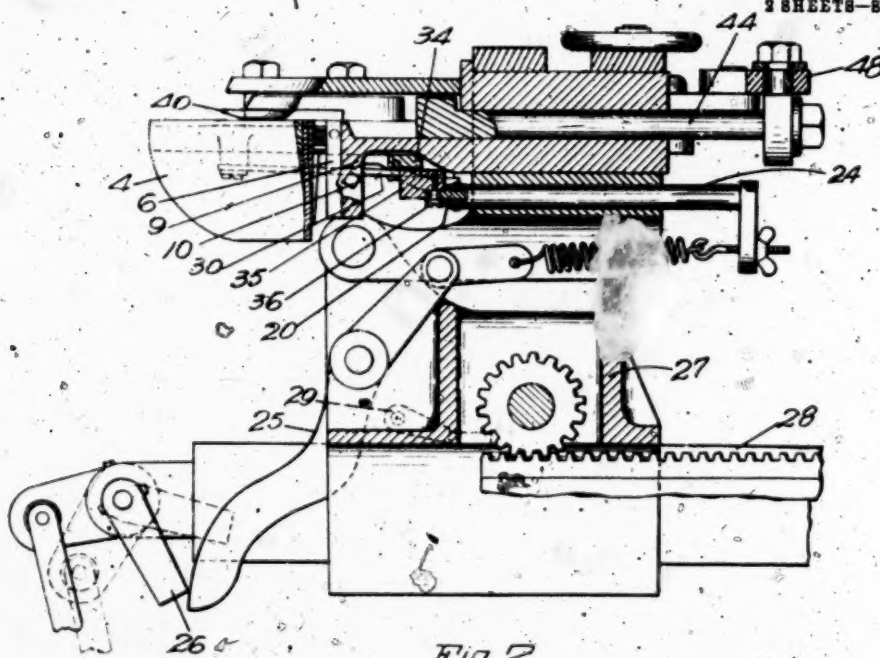


Fig. 2.

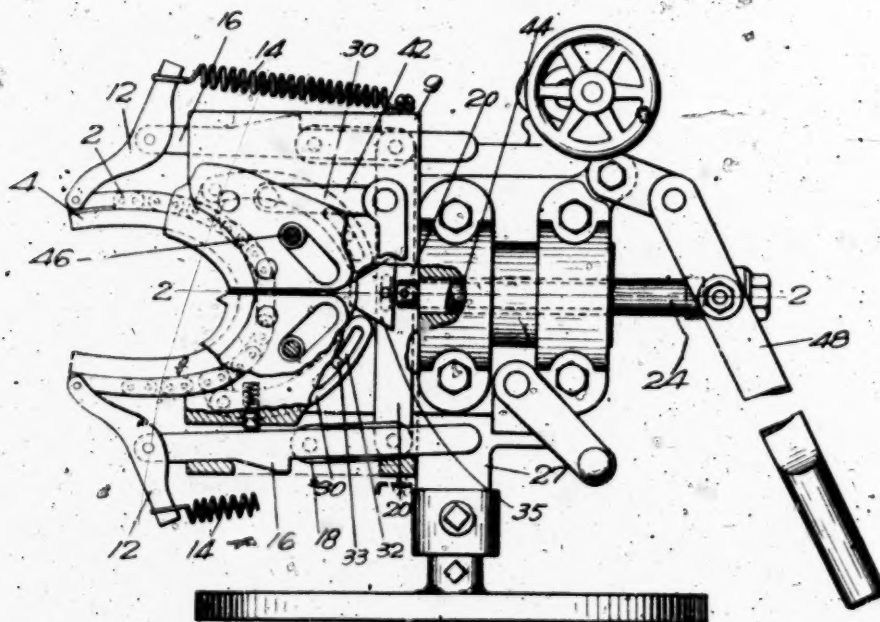


Fig. 1.

WITNESSES.

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INVENTOR.

Stephen Snow
By his Attorney,
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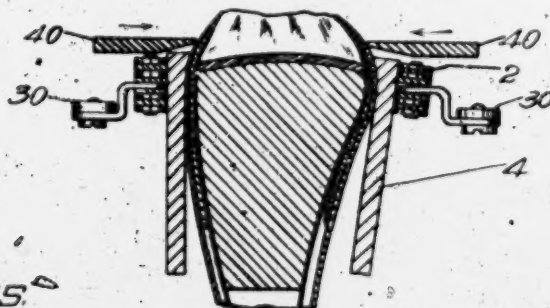
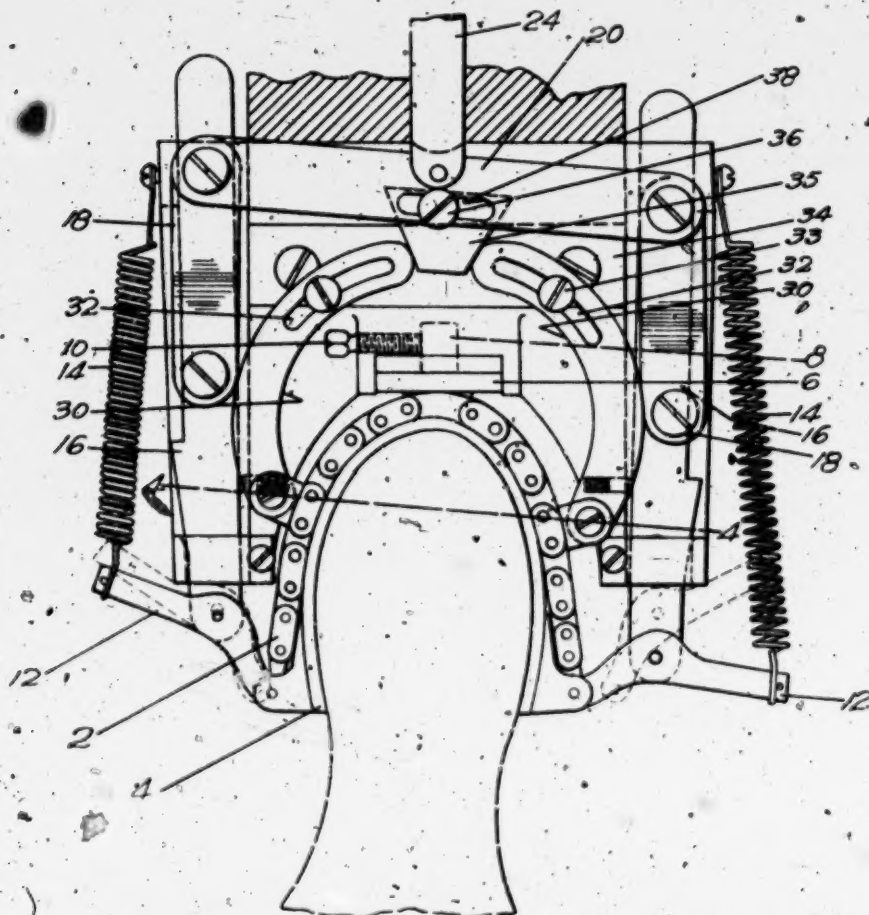
S. SNOW.
LASTING MACHINE.
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946,708.

Patented Jan. 18, 1910.

2 SHEETS—SHEET 2.

Fig. 3.



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Fig. 4

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UNITED STATES PATENT OFFICE.

STEPHEN SNOW, OF EVERETT, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

946,708.

Specification of Letters Patent.

Patented Jan. 18, 1910.

Application filed September 5, 1905. Serial No. 276,995.

REISSUED

To all whom it may concern:

Be it known that I, STEPHEN SNOW, a citizen of the United States, residing at Everett, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to means for holding shoe uppers upon lasts and particularly to means for clamping upper materials in position about an end portion of a last during the operation of lasting and holding them while the edge portions of the materials are being manipulated over the edge of the last.

The object of the invention is to secure more perfect fitting of the upper materials to the last than has heretofore been obtained, particularly in certain classes of work in which the upper materials include one or more layers of stiff material which it is difficult to bend or fold over the edge of the last, such as an unmolded counter.

The invention is herein shown as embodied in a lasting machine of the "bed" type, the particular machine herein illustrated as equipped with the invention being known commercially as the Ideal Lasting Machine which is more fully shown and described in United States Letters Patent, No. 521,954 of June 26, 1894, and No. 552,834 of January 7, 1896. In this machine the shoe is held between end-lasting mechanisms by which the upper materials at the two ends of the shoe are manipulated over the edge of a last into position to be secured to the inner sole.

The invention is herein shown in combination with mechanism for manipulating the upper materials into lasted position, but it will be understood that my invention is not limited to use in a lasting machine.

The invention may be embodied in mechanism for holding a shoe for any purpose, as, for example, while it is being lasted either by hand or by a lasting mechanism which is independent of the shoe holding mechanism.

The invention is here shown in combination with mechanism for lasting the heel

end of a shoe and it is of particular importance in holding the upper materials of this portion of the shoe, which includes, of course, the heel stiffener or counter, closely against the heel portion of the last, because it is found in practice that these upper materials tend to spring away from the side of the last adjacent to its edge when their edge portions are bent or folded over the edge of the last. This is especially noticeable when counters are used which have straight or unmolded flange portions instead of flange portions which have been molded to lie upon the last bottom.

As machines of the type illustrated have been heretofore constructed, end-embracing bands which are designed to clamp the upper materials about the end portions of lasts have been supported at their two ends and at their middle portions, which engage the extreme rear end of the last and in closing a band it has been firmly pressed against the sides of the last at these three points. With clamping or holding means thus constructed it has been found that during the operation of bending the edge portion of the upper materials over upon the last bottom, and particularly in breaking down the flange of an unmolded heel counter, the upper materials at the corners of the last frequently sprang away from the sides of the last near its edges, the term "corners" being used herein to designate those portions of each side of the last which are located approximately midway between the extreme rear end of the heel and the front ends of the heel stiffener or between the points engaged by those portions of the heel band at which the heel band is supported. This has caused imperfect fitting of the upper at these points which of course was objectionable.

In accordance with the present invention means is provided for holding the upper materials against the last at the corners of the last.

In the illustrated embodiment of the invention pressers are provided by which portions of the band at the sides of the last are caused to force and hold the upper materials against the corners of the last said pressers are arranged to be actuated or controlled by connections of their own with the actuating mechanism by which the band

is closed. To this end the pressers are separately actuated rather than partaking merely of the movement of the heel band.

As is well known, some lasts are not symmetrically formed at the heel end, but are fuller or larger upon one side than upon the other side. Difficulty has been experienced in clamping the upper materials with the desired firmness against the smaller side of such lasts. To obviate this difficulty one object of the present invention is to provide means for permitting the presser bars to adapt themselves to the contour of the last on its two sides and for then pressing the bars uniformly toward the last so that the upper materials are held firmly against the opposite corners of the last notwithstanding differences in the fullness of the two sides of the last. To this end, in the illustrated embodiment of the invention, the pressers are actuated through an equalizing device which allows either presser first meeting resistance to pause in its movement while the other presser continues to advance until it has encountered an equal resistance on its side of the last, after which the pressers will act uniformly for pressing and holding the upper materials against the last at the two points of engagement.

Other features of the invention including details of construction and combinations of parts will be hereinafter described and pointed out in the claims.

In the drawings which represent a preferred embodiment of the invention, Figure 1 is a plan view of so much of an end-lasting mechanism with my improvements applied to it as is necessary for disclosing the relation of the new parts to the associated portions of the heel clamping and lasting means; Fig. 2 is a sectional view on line 2-2 of Fig. 1; Fig. 3 is a bottom plan view of the heel clamping band and its actuating mechanism; Fig. 4 is a sectional view on line 4-4 of Fig. 3 showing a shoe in position within the heel band and representing the lasting plates as advancing to break down or fold the upper materials, including an unmolded heel counter, into position to be secured to the inner sole on the bottom of the last.

The heel band for embracing the heel end of the last and clamping and holding the upper materials against the last while the edge portions of said materials are being folded or manipulated into lasted position upon the last bottom is shown as comprising a chain 2 and a leather lining 4 secured to the chain. The chain is provided at the middle rear portion of the band with a depending block 6 having a lateral stud 8 which is received in a recess in the band-support 9 and secured by a screw 10, as shown in Figs. 2 and 3. The front ends of the chain at the open end of the band are

pivoted to levers 12, the outer ends of which are connected by springs 14 to the support 9. The levers are pivoted to slide-bars 16 which are guided in the support and are connected by links 18 to the opposite ends of a lever 20. The lever 20 is pivoted midway between its ends to a rod 24, as shown most clearly in Figs. 2 and 3. The rod is longitudinally movable through a guideway in the frame-work of the heel-lasting mechanism and is yieldingly connected with a lever 25 having its lower end in the path of a rocker arm 26 which may be moved manually or by power toward the dotted line position shown in Fig. 2. Movement of the rocker arm in the direction suggested turns the lever 25 to advance the rod 24, for causing the band to embrace the heel end of a shoe and clamp the upper materials against the last. It may be explained that in practice a shoe is supported at the proper altitude to be acted upon and as herein shown the entire end-lasting mechanism supported on the carriage 27 is advanced over the track 28 to position the middle rear portion of the band against the heel end of the last where it is locked by a pawl 29 engaging ratchet teeth on the track. The parts as thus far described may be substantially as shown in Letters Patent, No. 552,834, before mentioned, and it will be understood that by means of the described construction the band is firmly engaged with the extreme heel end of the last and that the actuation of the lever 25 advances the slide-bars 16 which tend to advance the levers 12. This causes the levers first to draw the end portions of the band forwardly until the band has snugly embraced the rear portion of the last, after which the levers rock from the angular position shown in dotted lines in Fig. 3 toward the position shown in full lines for carrying the end portions of the band inwardly against the shoe at about the front ends of the heel stiffener. By this arrangement the upper materials are held firmly against the extreme rear end of the last and against the sides of the last at the front ends of the band, but there is not sufficient pressure against the upper materials at the corners of the last to prevent said materials from sometimes springing away from the last to an objectionable extent while the flange of an unmolded heel stiffener is being broken down.

In accordance with this present invention pressers, herein represented as bars 30, are arranged to act against the shoe at the corners of the last for pressing and holding the upper materials against this portion of the last. As herein shown the bars 30 are connected with the chain 2 and act through the heel band for exerting pressure against the upper materials at the corners of the last. To this end the bars are curved as

shown in Fig. 3 and are provided with curved slots 32 in which stand pins 33 rigidly secured to a cross-plate 34 attached to the band-support 9. The rear ends of the bars are engaged by the inclined faces of a wedge block 35 which is mounted on the lever 20, heretofore described. This arrangement provides that when the lever 25, also before mentioned, is turned for closing the band about the end of the last, the wedge block will be advanced between the rear ends of the bars 30 thus actuating the pressers separately from or in addition to the movement which the band as a whole receives. The arrangement by which the front ends of the bars 30 are connected with the heel band and the walls of the curved slots engage the fixed studs 33 insures that the bars shall rock and advance in curved paths and press against the shoe at the corners of the last, whereby the upper materials are pressed inwardly and securely held against springing away from the corners of the last.

Preferably and as herein shown the wedge block 35 acts as an equalizer for insuring uniform pressure by the two bars 30, and to this end the block is shown as movably mounted upon the lever 20 being connected thereto by a pin 36 passing through a slot 38 in the lever as shown most clearly in Fig. 3. This construction permits either bar that may encounter greater resistance to its advance movement than the other bar to pause while the block moves sidewise upon the lever 20 until the advancing bar encounters an equal resistance, whereupon the two bars will act uniformly against the work. This provision enables the upper to be pressed and held with equal force against the opposite corners of a last which is fuller upon one side than upon the other side.

The means herein shown for breaking down and otherwise manipulating the edge portions of the upper materials into lasting position comprises lasting plates 40 connected by links 42 with the cross-head of a plunger 44 and guided by roller studs 46 to close toward each other as they are advanced by the plunger. A hand lever 48 is shown for actuating the plunger. The advancing and closing movement of the lasting plates causes them to bend or fold inwardly the edge portions of the upper materials, as indicated in Fig. 4, and to press them into lasted position upon the bottom of the last.

In the use of the machine herein shown as provided with my invention, a shoe is positioned upon a jack, not shown, and the heel-lasting mechanism is moved over the track 28 into operative relation to the heel end of the shoe, the middle portion of the band being pressed against the extreme rear end of the heel. The end-lasting mechanism

is locked in this position by the pawl 29. The rocker arm 26 is then actuated either manually or by power to turn the lever 25 as described for moving the lever 20 forwardly. This movement of the lever advances the bars 16 for actuating the levers 12 and causes them to tend to draw the ends of the band forwardly and at the same time to press them inwardly, whereby the band is made to embrace the last snugly and to press the upper materials against the sides of the last. The movement of the lever 20 also acts through the wedge-block 35 to press and hold the band against the corners of the last and thereby prevent the upper materials from springing away from the last during the subsequent operation of the wiper-plates 40, by means of the hand lever 48, in breaking down the upper materials and wiping them over the last bottom. If the last is fuller on one side than on the other side, as is the last illustrated in Fig. 4, the wedge-block slides on the lever 20 to cause the presser bar 30 which is located at the side of the last having the less fullness to move farther than the other presser bar whereby the heel band is forced equally against the two corners of the last.

It is obvious that my invention is not limited to the embodiment thereof herein shown but the invention may be embodied in many mechanisms for supporting and holding upper materials about a last.

Having explained the nature of my invention and having fully described a construction embodying the same, I claim as new and desire to secure by Letters Patent of the United States:—

1. In a machine of the class described, the combination with means for clamping upper materials about the end portion of a last, of additional means for holding the upper materials against the corners of the last.

2. In a machine of the class described, the combination with an end-embracing band and mechanism for closing said band about the end of a last, of additional means for pressing said band against the corners of the last.

3. In a machine of the class described, the combination with an end-embracing band and mechanism for closing the band about an end of a last, of means for pressing the band against the opposite corners of the end of the last, and means for equalizing the pressure at the two corners.

4. In a machine of the class described, the combination with a heel band and actuating mechanism for causing the band to embrace the heel end of a last, of means intermediate said actuating means and the portions of the band adjacent to the corners of the last for forcing said portions of the band against the corners of the last.

5. In a machine of the class described, the

combination with means comprising an end-embracing band for clamping upper materials about the end portion of a last, of presser bars engaging the portions of the band adjacent to the corners of the last, a wedge-block for actuating said presser bars, means for supporting said wedge-block, and a movable connection between the wedge-block and the supporting means arranged to cause the block to act equally upon the two presser bars.

6. In a lasting machine, the combination with end-embracing mechanism comprising an end-embracing band, and mechanism for manipulating the upper materials into lasted position upon the bottom of the last, of means for applying pressure through the band to the corners of the last to prevent the upper materials from springing away from the sides of the last while being manipulated into lasted position on the bottom of the last.

7. In a lasting machine, the combination with an end-embracing band and means for closing the band about the heel end of a last, of lasting plates for bending the upper materials over the edge of the last, and means additional to the band closing means for forcing the band against the upper materials at the corners of the last to prevent the upper materials from springing away from the last while being bent over the edge of the last by the plates.

8. In a machine of the class described, the combination with an end-embracing band and actuating mechanism connected with the band at its two ends and at its middle portion; of means for engaging it at places intermediate said points of connection with said actuating mechanism for causing it to hold the upper materials against the corners of the last.

9. In a machine of the class described, the combination with means for clamping the upper materials about the end portion of a last, of additional means arranged for self adjustment to lasts of different shapes for applying pressure through the clamping means for holding the upper materials against the corners of the last.

10. In a machine of the class described, the combination with an end-embracing band, of automatically operating mechanism for closing the band about the end of a last, said mechanism having provision for pressing the band against the corners of the last for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

STEPHEN SNOW.

Witnesses:

JOSEPH WARREN,
C. E. SNOW.

T. G. PLANT.
LASTING MACHINE.

APPLICATION FILED SEPT. 28, 1908.

Patented May 17, 1910.

14 SHEETS—SHEET 1.

958,280.

Fig. 1.

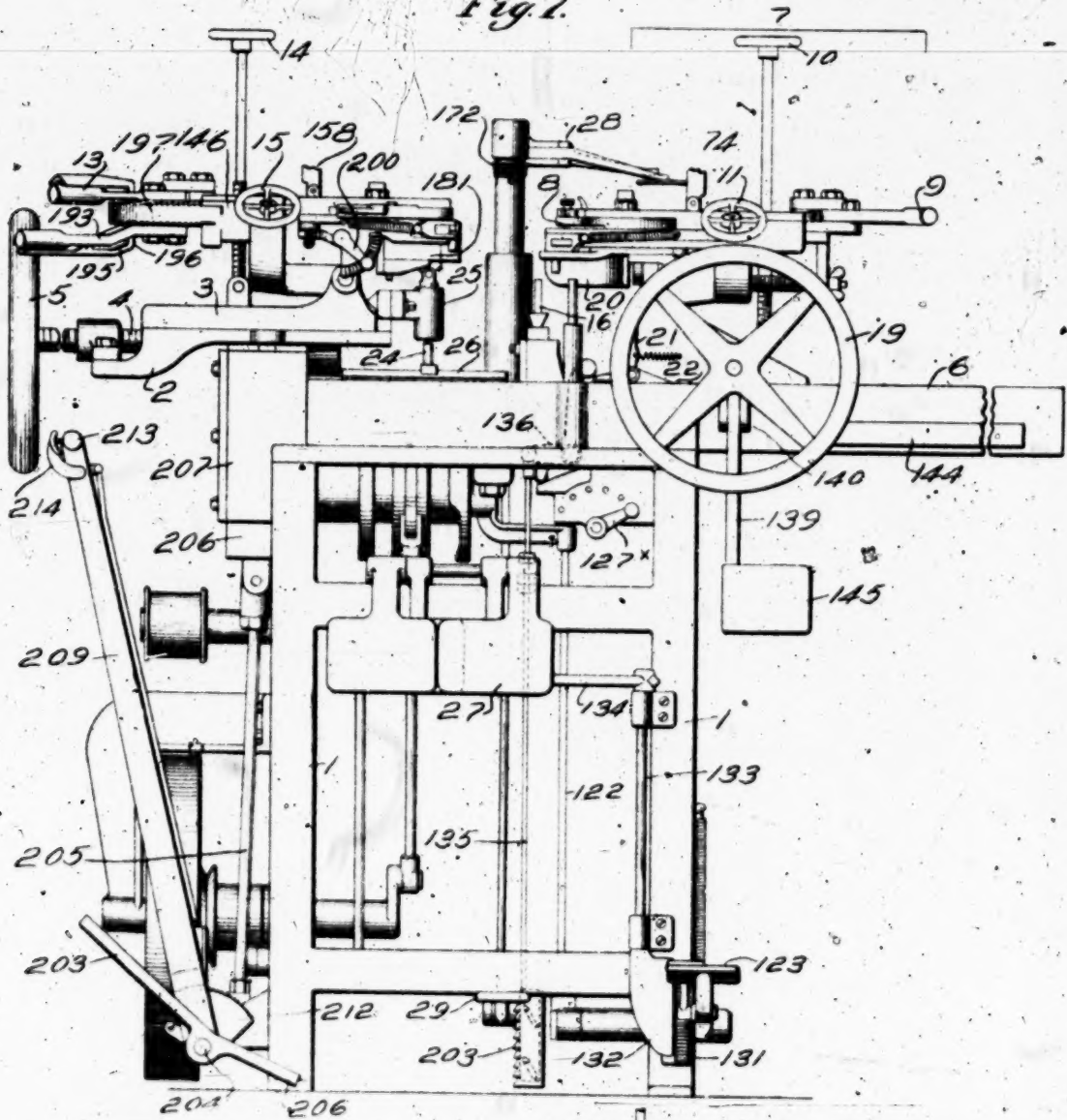
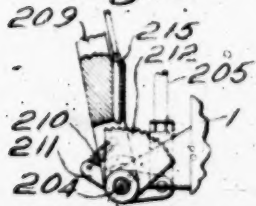


Fig. 3.



Witnesses:
Russell F. Hatch.
Arthur L. Hatch.

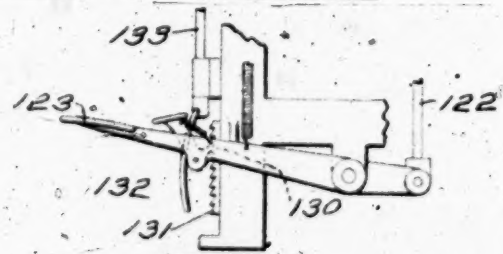


Fig. 2.

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LASTING MACHINE.

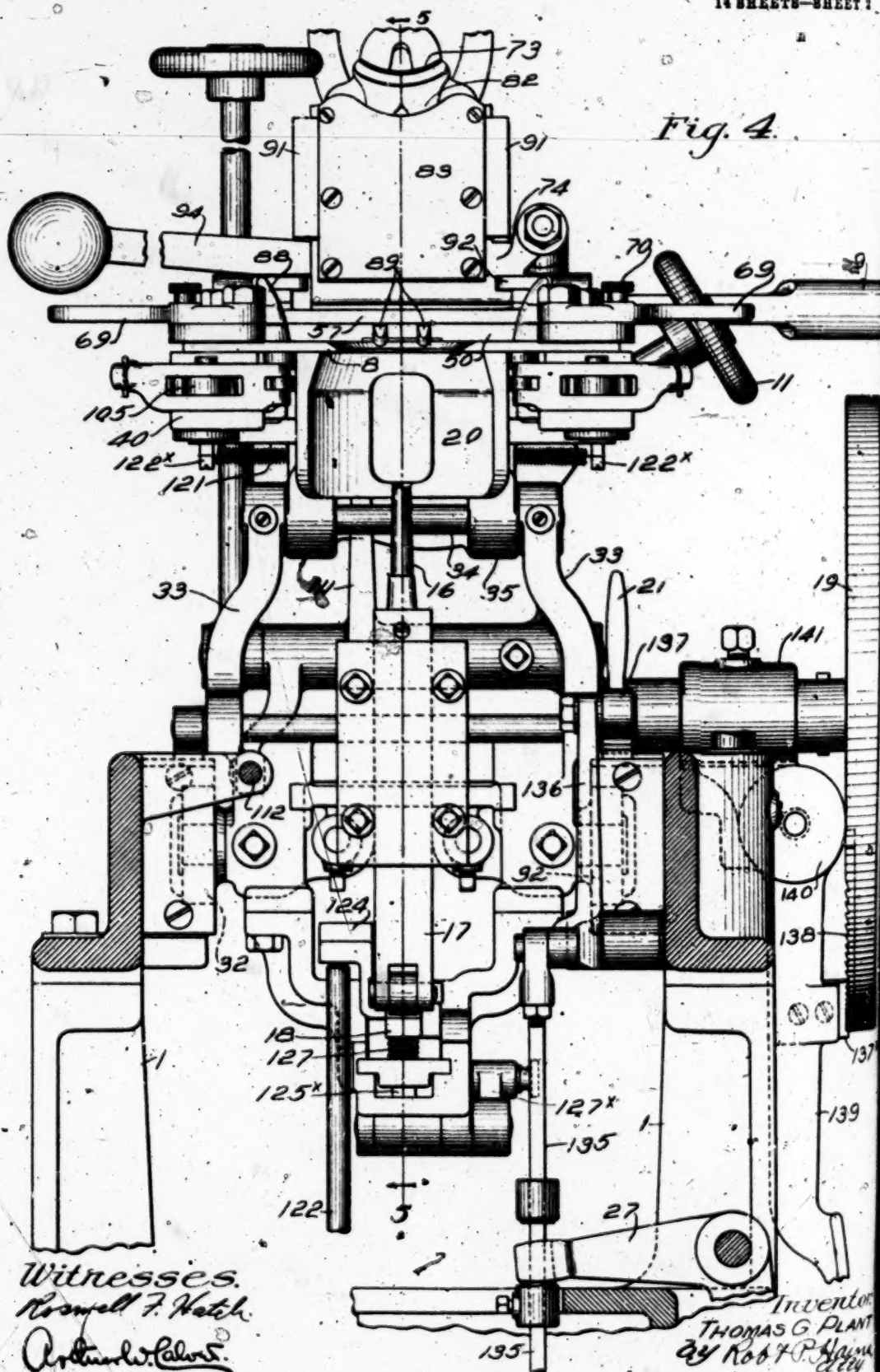
APPLICATION FILED SEPT. 28, 1908.

Patented May 17, 1910.

14 SHEETS—SHEET 1.

958,280.

Fig. 4.



Witnesses.
 Russell F. Hatch.
 Arthur W. Calver.

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 atty

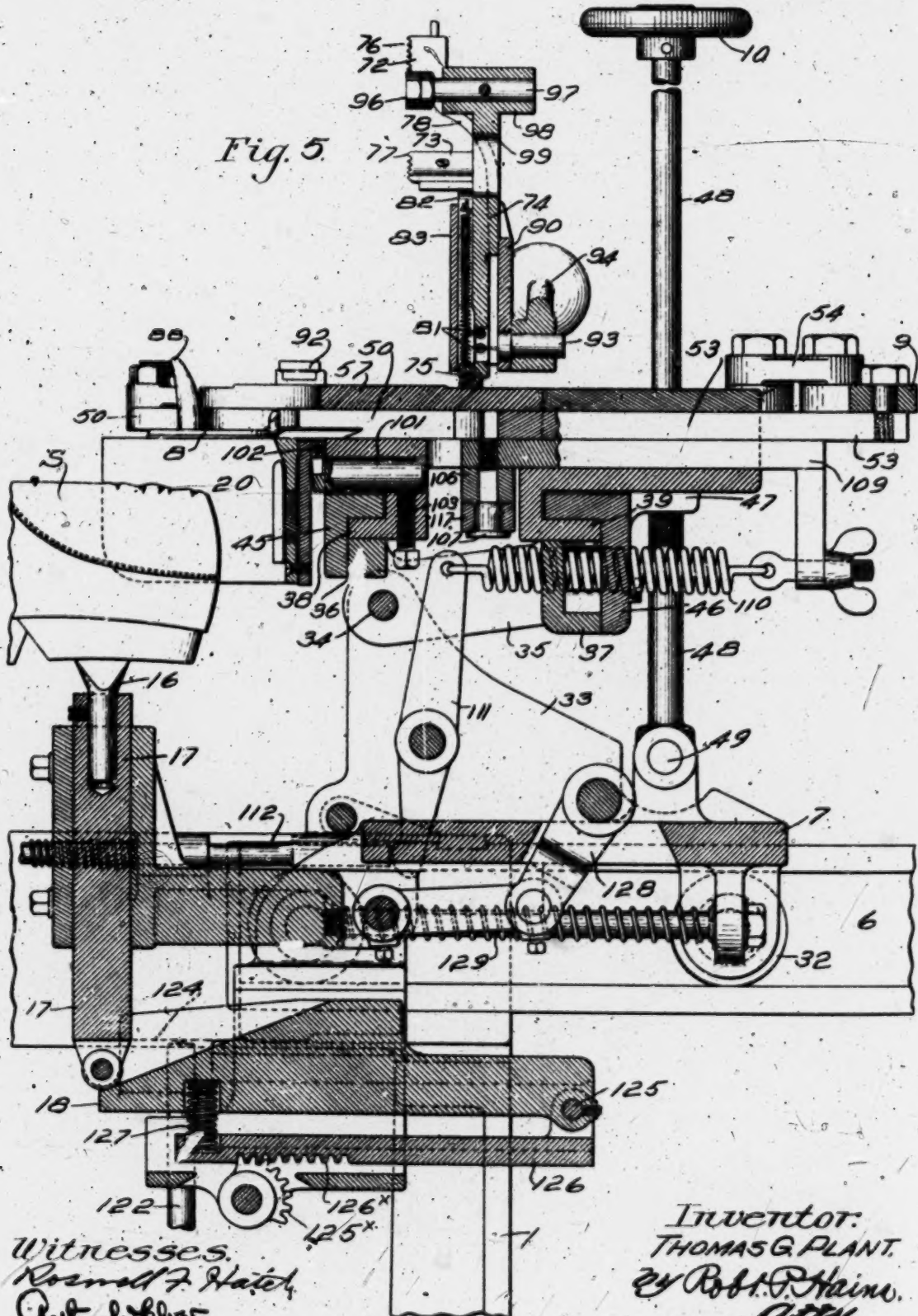
T. G. PLANT.
LASTING MACHINE.

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Patented May 17, 1910.

14 SHEETS—SHEET 3.



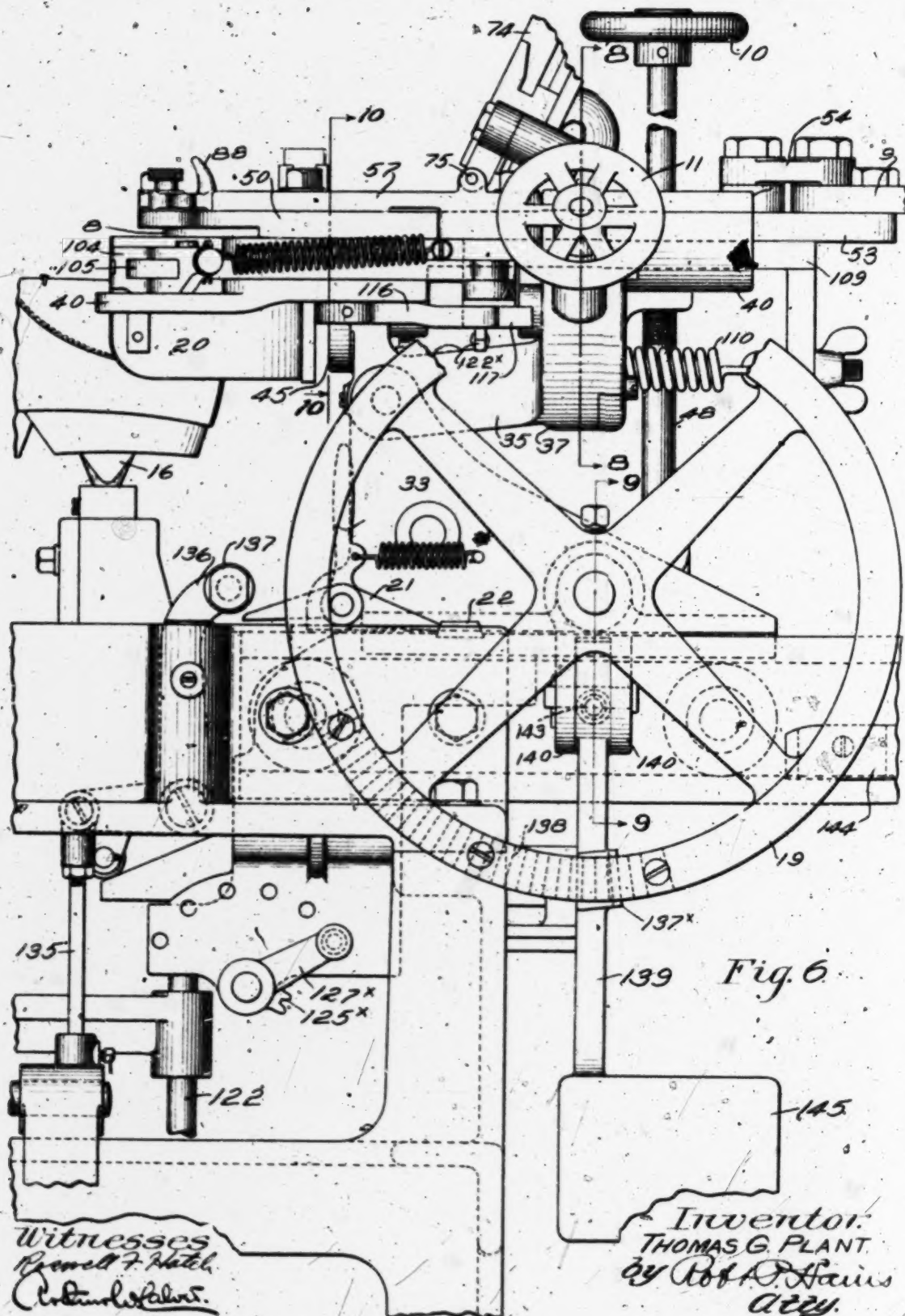
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14 SHEETS—SHEET 4.



T. G. PLANT.
LASTING MACHINE.

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14 SHEETS—SHEET 5.

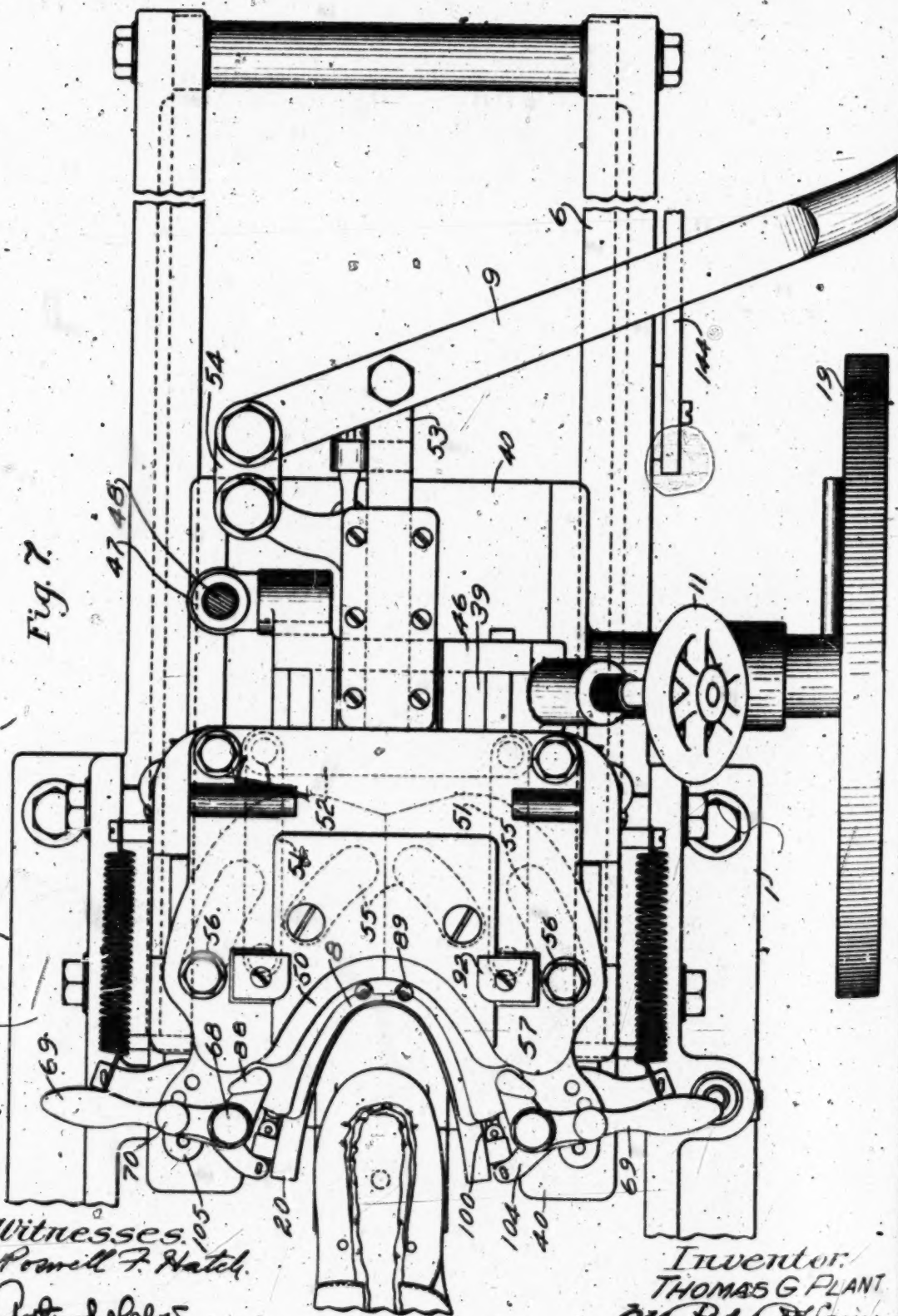


Fig. 7.

Witnesses:
Rennell F. Hatch.
Arthur H. Adams.

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LASTING MACHINE.

APPLICATION FILED SEPT. 28, 1908.

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14 SHEETS—SHEET 6.

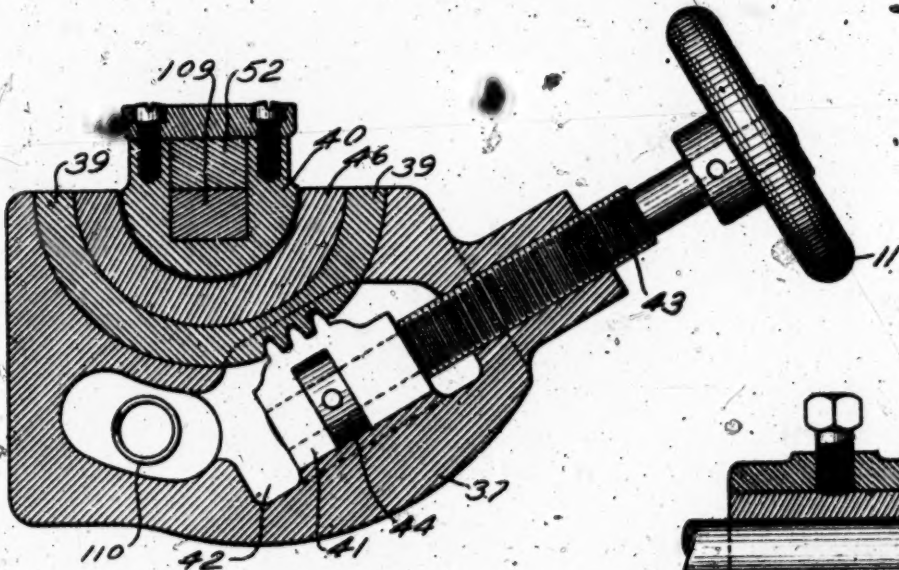


Fig. 8.

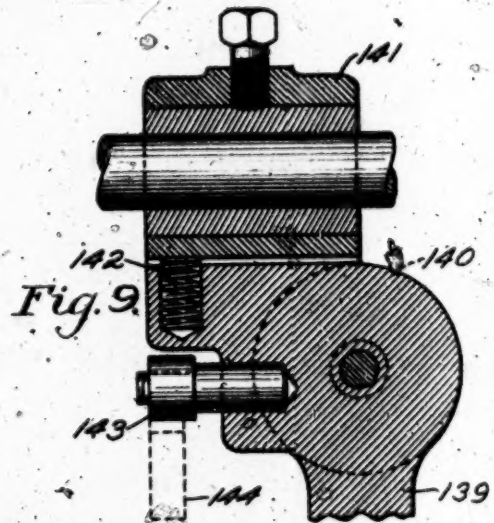


Fig. 9.

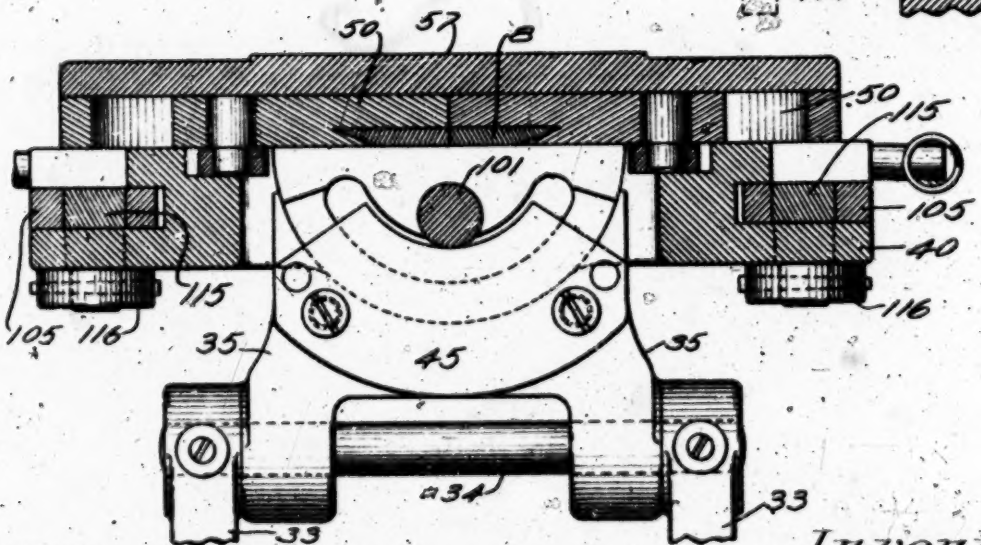


Fig. 10.

Witnesses.
Russell F. Hatch.
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LASTING MACHINE.
APPLICATION FILED SEPT. 28, 1908.

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Patented May 17, 1910.

14 SHEETS—SHEET 7.

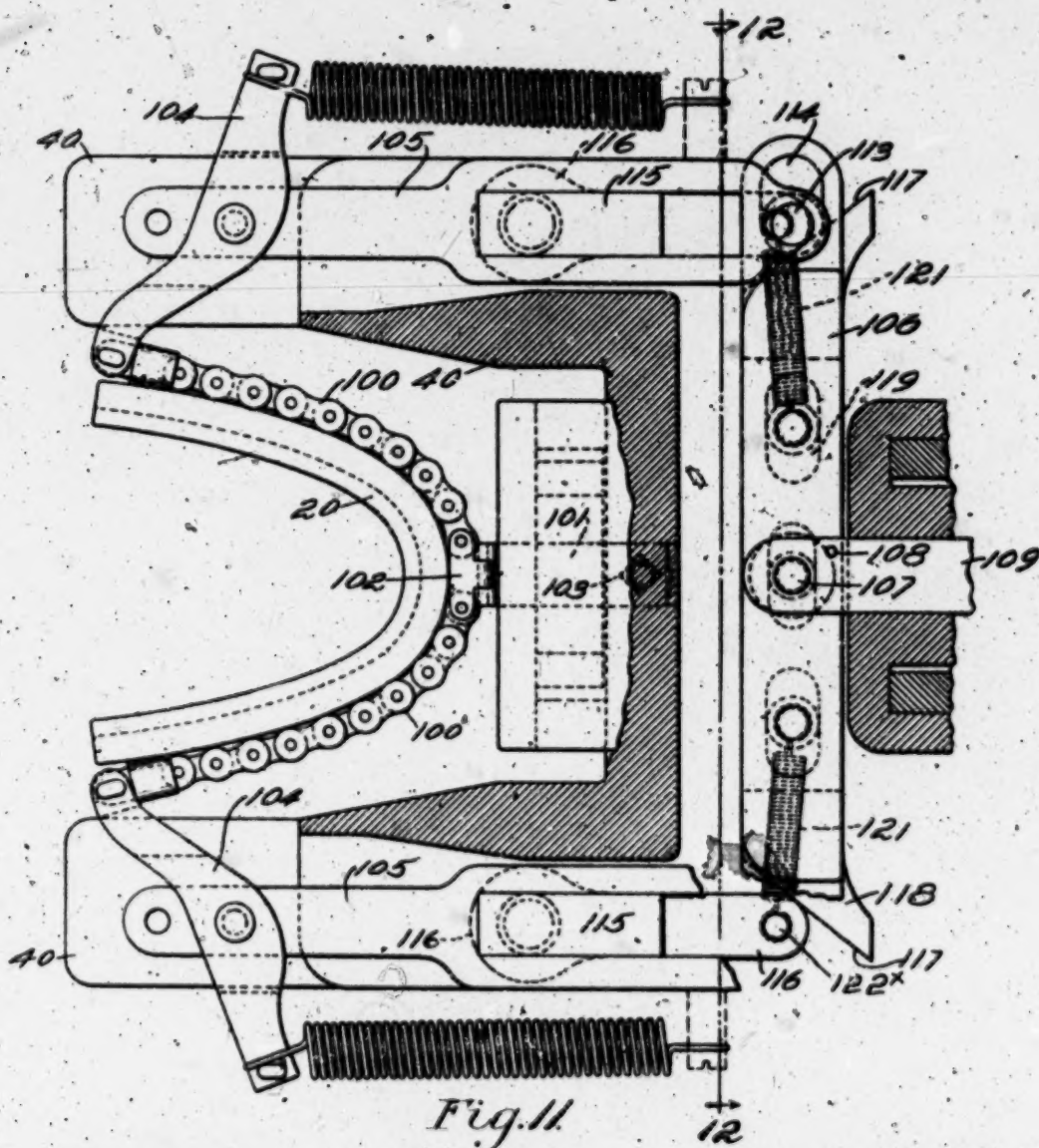


Fig. 11.

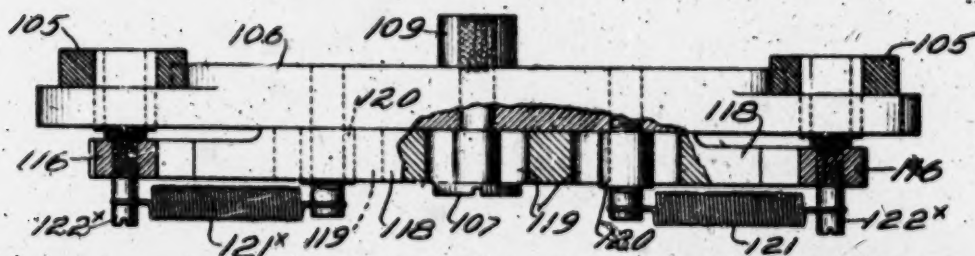


Fig. 12.

Witnesses.
Roswell F. Hatch.
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LASTING MACHINE.

APPLICATION FILED SEPT. 28, 1908.

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14 SHEETS—SHEET 8.

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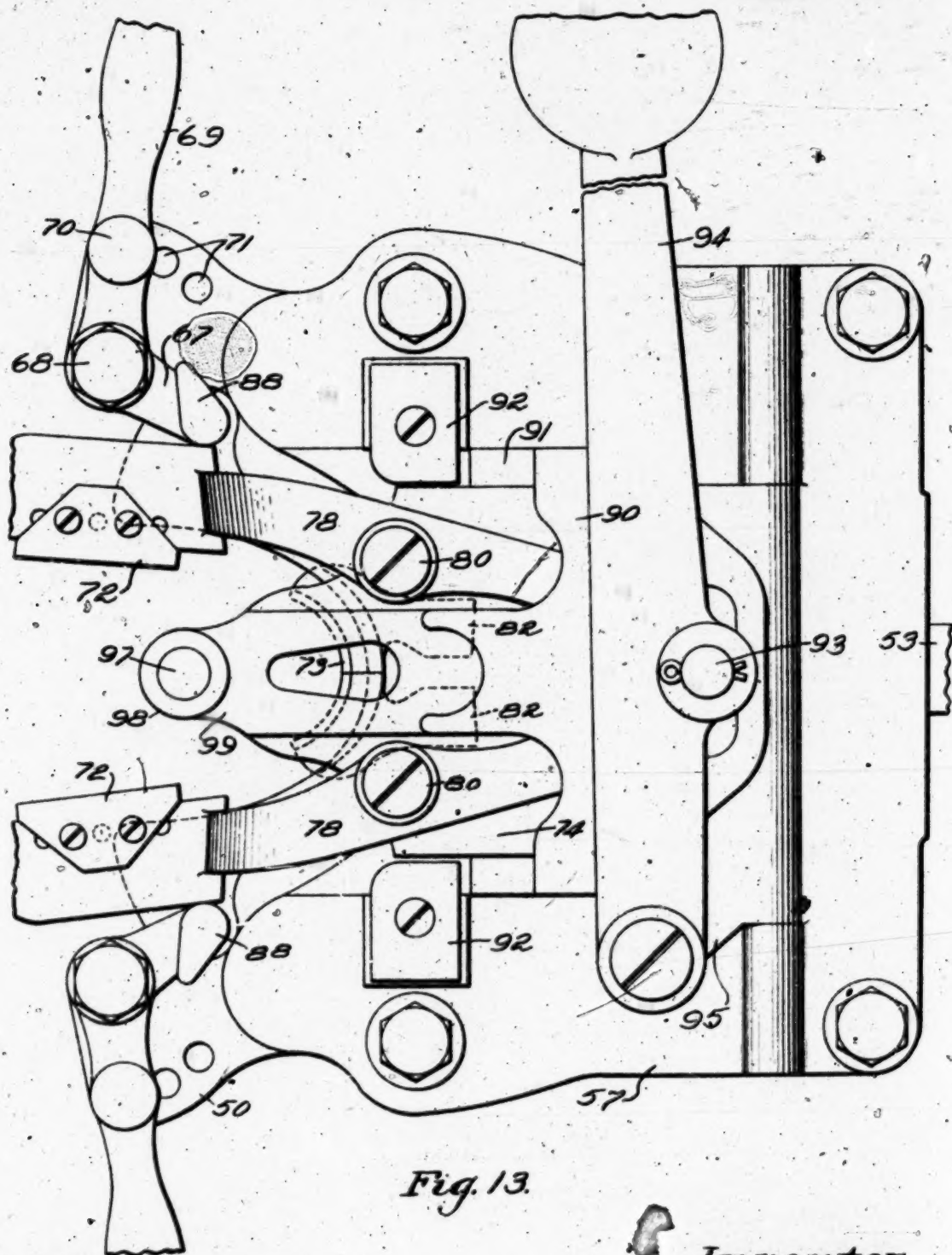


Fig. 13.

Witnesses
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LASTING MACHINE.
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14 SHEETS—SHEET 9.

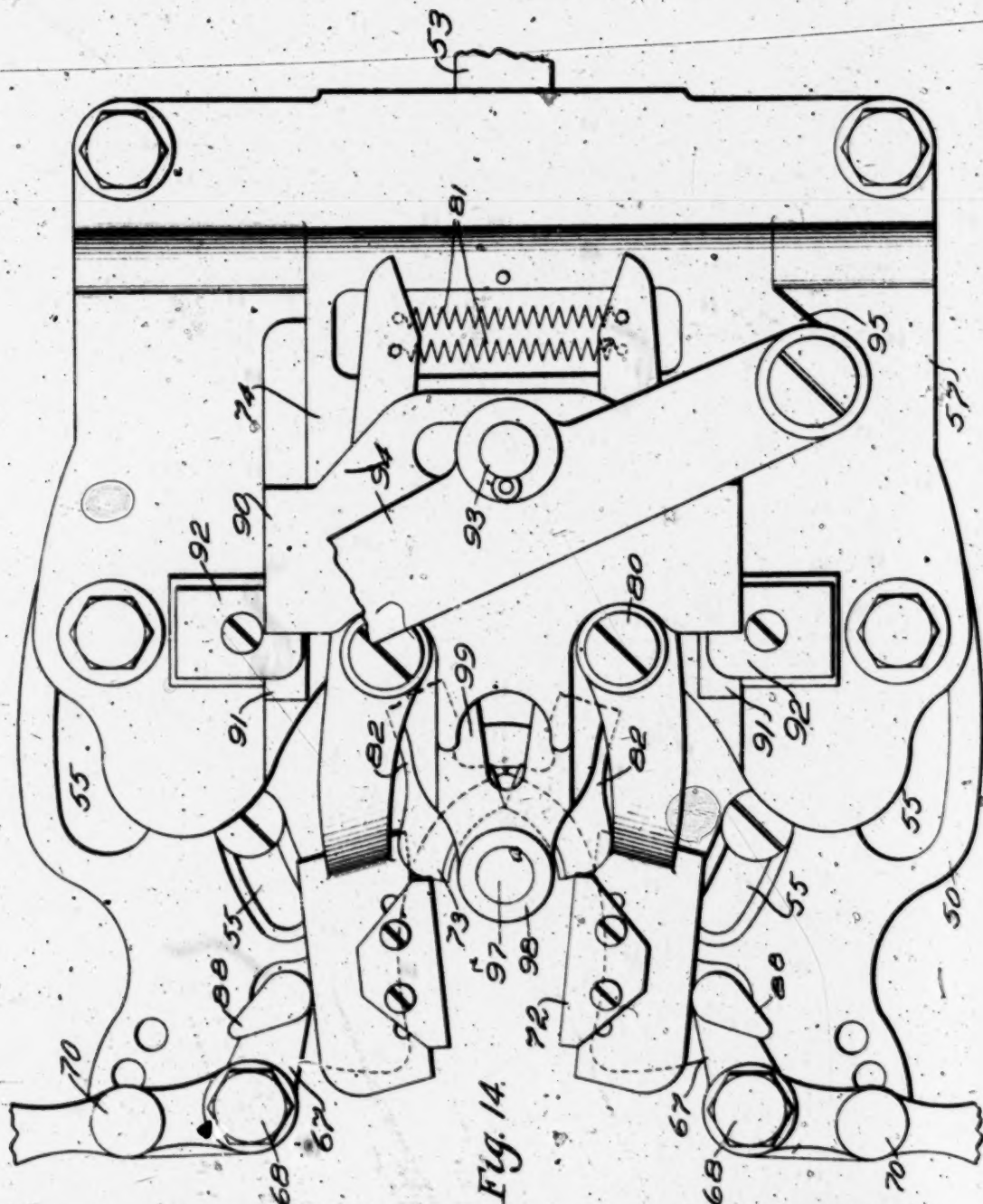


Fig. 14.

Witnesses.
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LASTING MACHINE.

APPLICATION FILED SEPT. 28, 1908.

Patented May 17, 1910.

14 SHEETS—SHEET 10.

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Fig 15

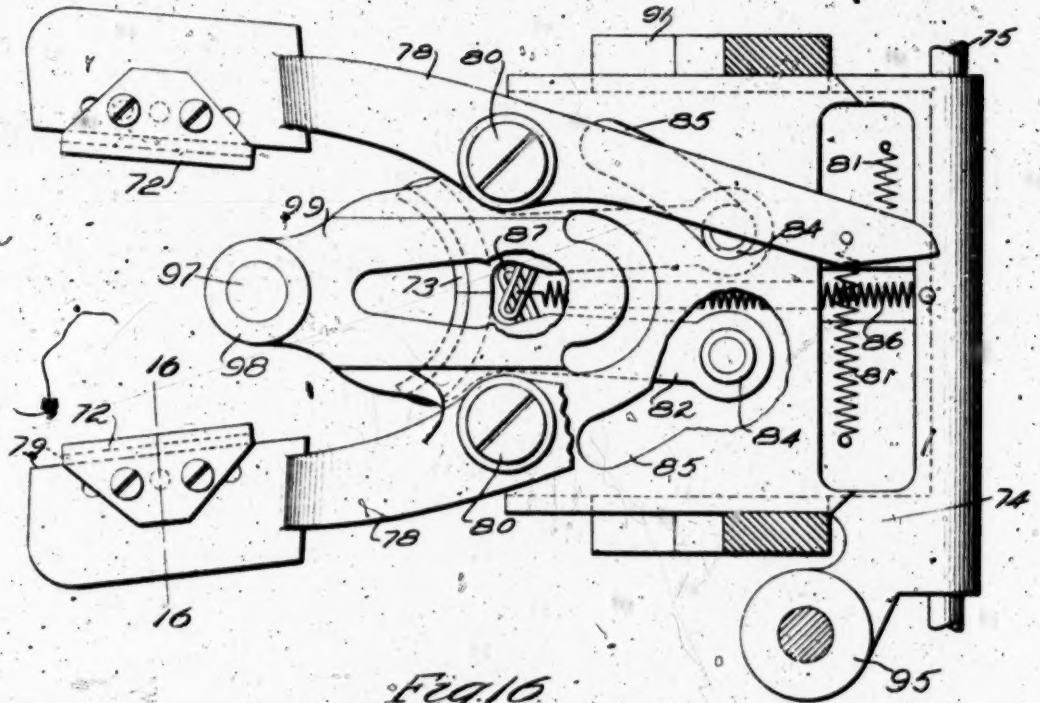


Fig 16

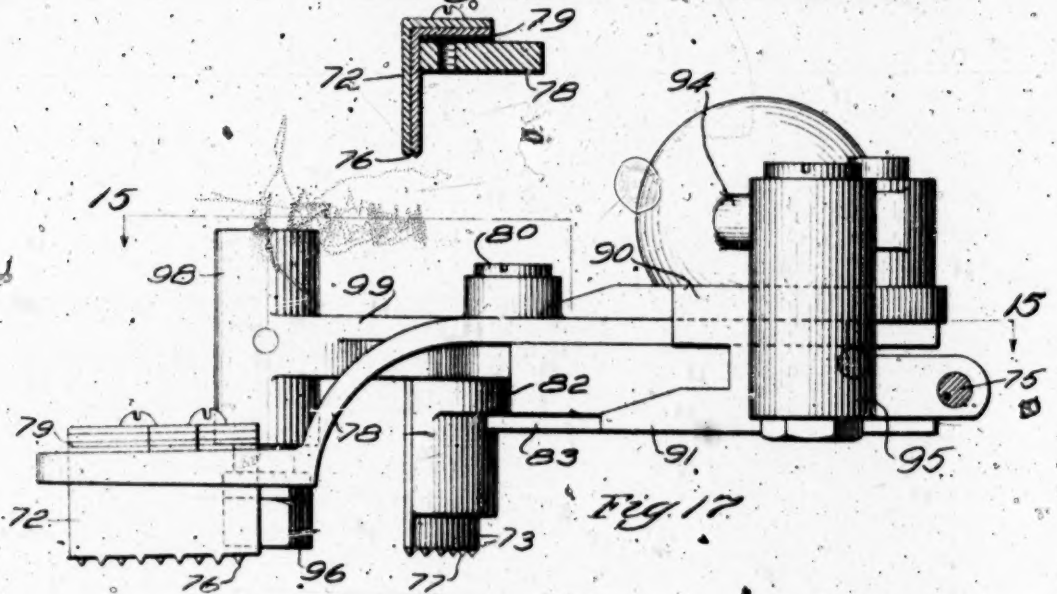


Fig 17

Witnesses:
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APPLICATION FILED SEPT. 28, 1908.

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14 SHEETS—SHEET 11.

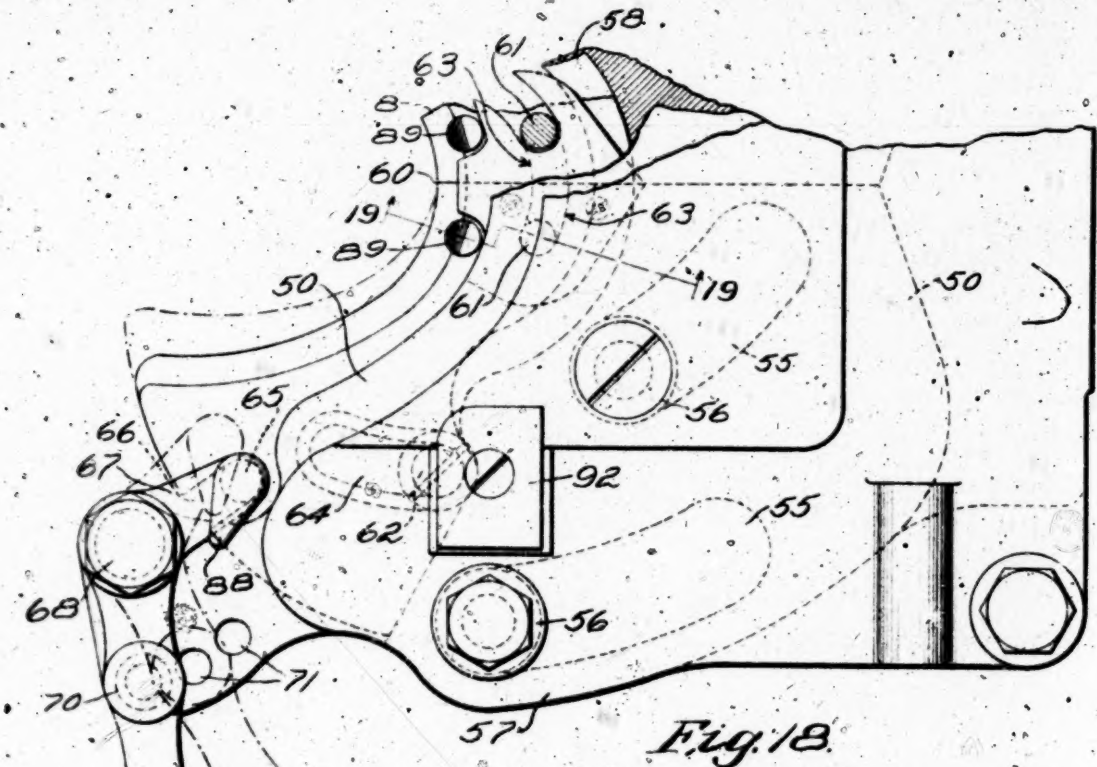


Fig. 18.

Fig. 19.

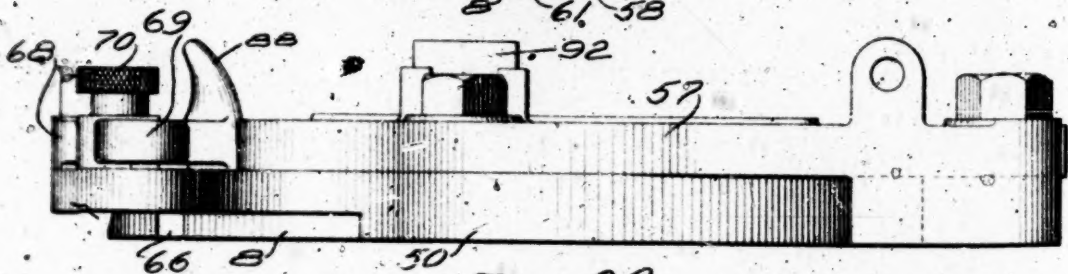


Fig. 20.

Witnesses:
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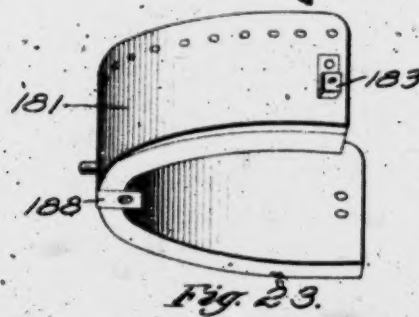
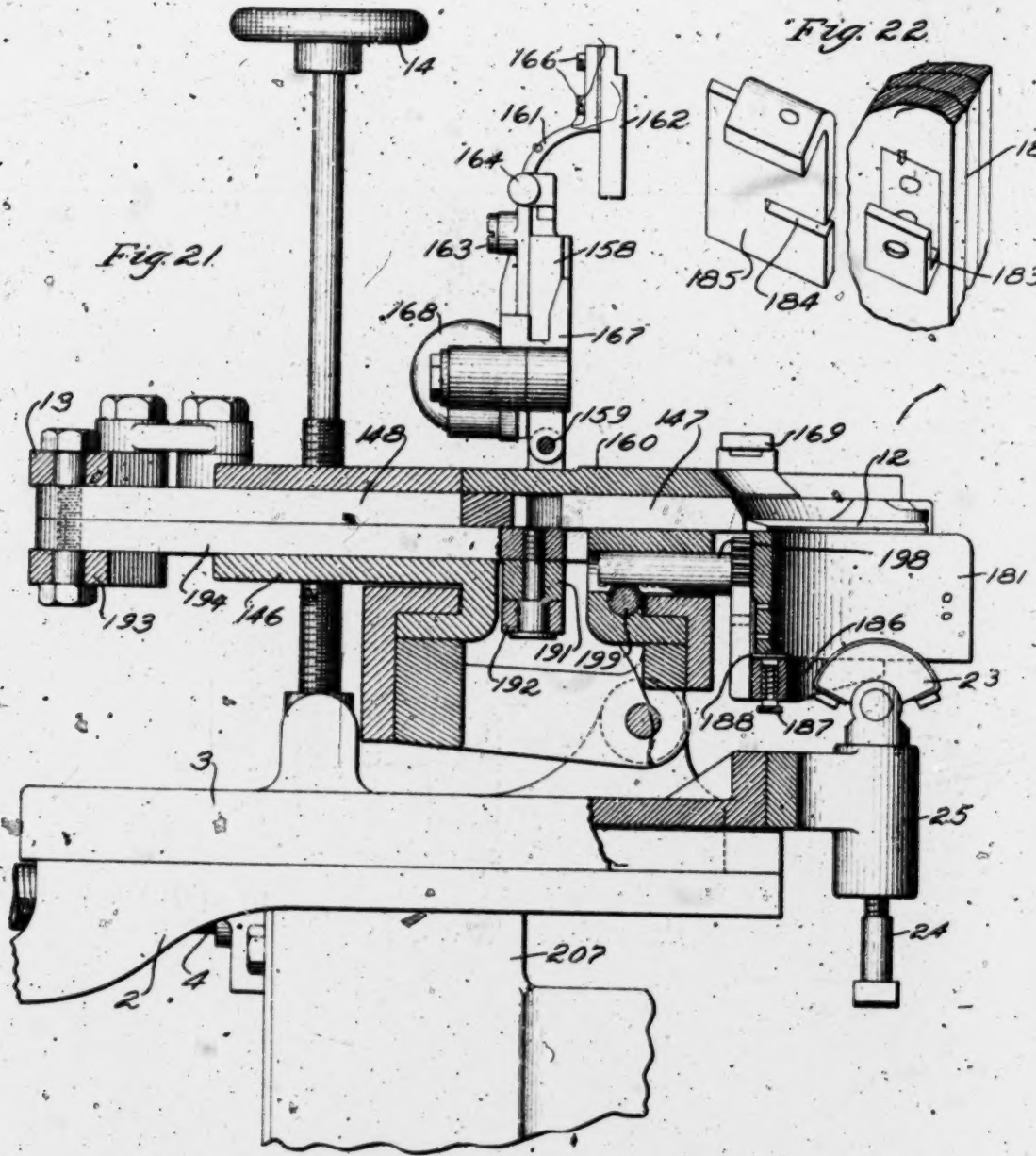
T. G. PLANT.
LASTING MACHINE.

APPLICATION FILED SEPT. 28, 1908.

958,280.

Patented May 17, 1910

14 SHEETS—SHEET 12



Witnesses.
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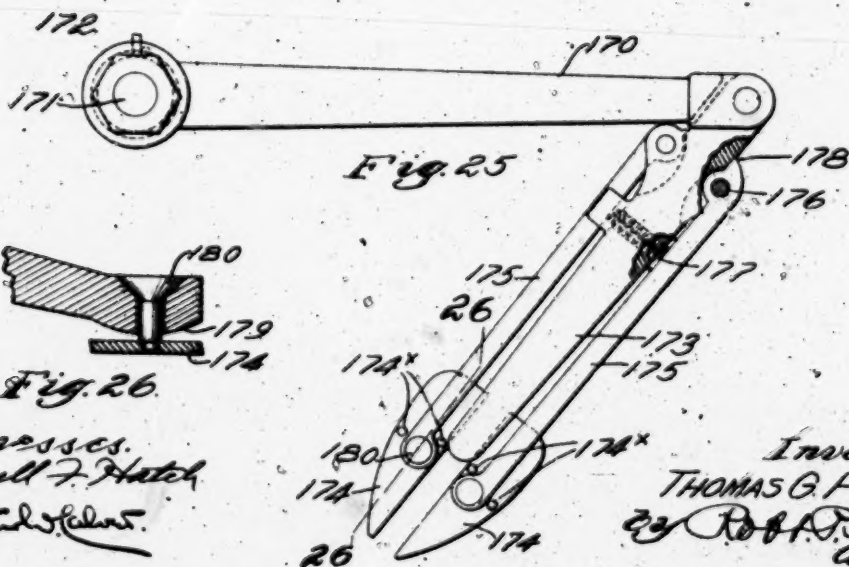
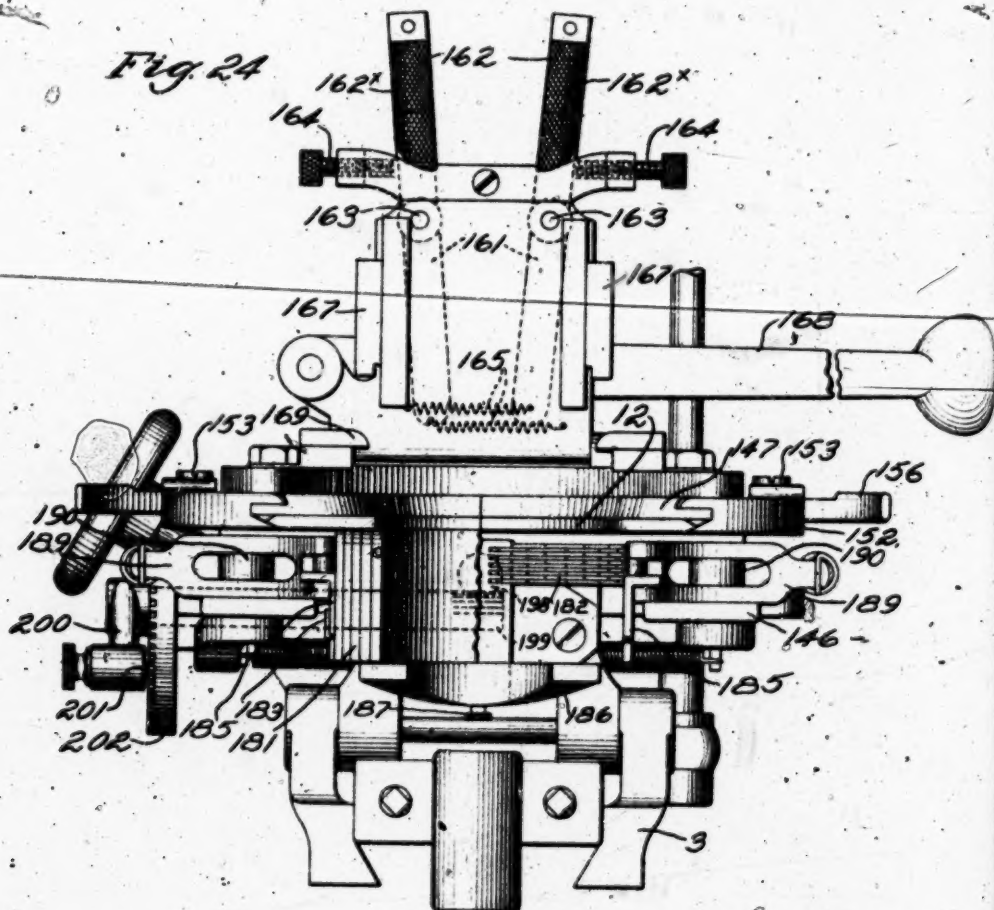
T. G. PLANT.
LASTING MACHINE.

APPLICATION FILED SEPT. 28, 1908.

958,280.

Patented May 17, 1910

14 SHEETS—SHEET 13



Witnesses.
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LASTING MACHINE.
APPLICATION FILED SEPT. 28, 1908.

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Patented May 17, 1910.

14 SHEETS—SHEET 14.

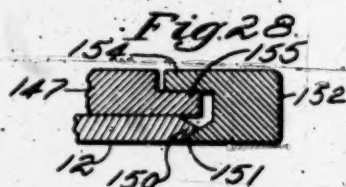
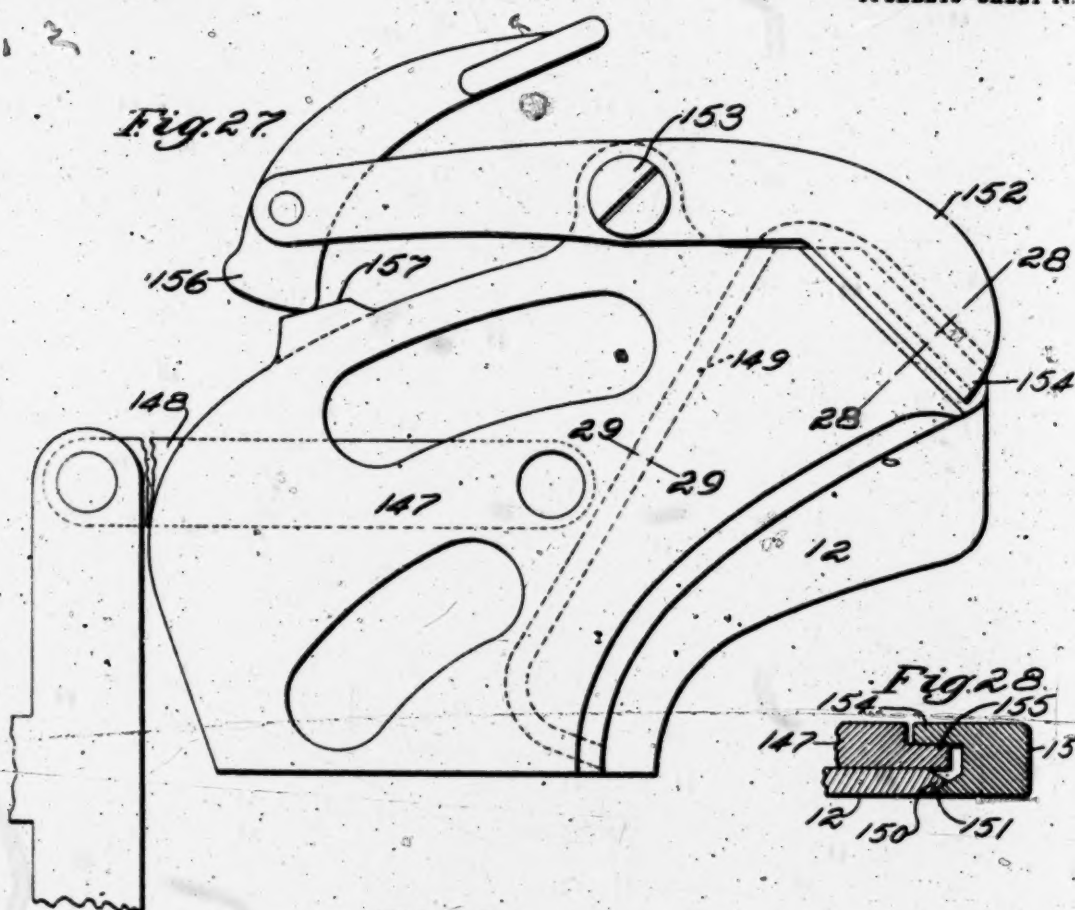


Fig. 30.

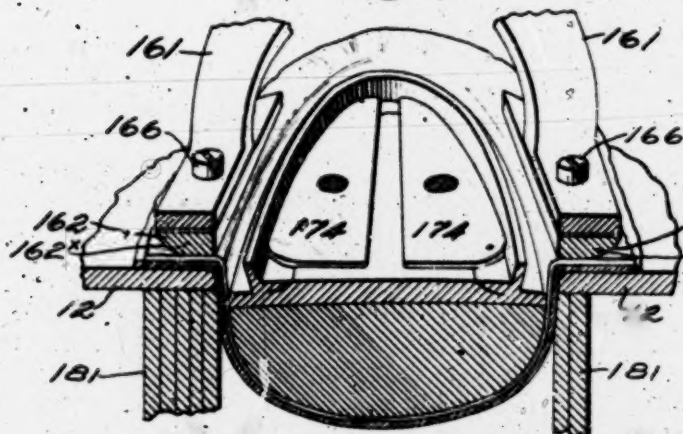


Fig. 31.

Witnesses.
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Arthur J. Plant



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By Robt. A. Harris,
Atty.

UNITED STATES PATENT OFFICE.

THOMAS GUSTAVE PLANT, OF BOSTON, MASSACHUSETTS.

LASTING-MACHINE.

958,280.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed September 28, 1908. Serial No. 455,159.

To all whom it may concern:

Be it known that I, THOMAS G. PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to machines for lasting boots and shoes, and more particularly to machines of the bed lasting class employing wipers for the lasting operation.

The invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings: Figure 1 shows, in side elevation, a typical bed lasting machine embodying one form of the invention; Fig. 2 is a detail in end-elevation showing the releasing lever for the heel elevating post; Fig. 3 is a detail in sectional elevation of the elevating devices for the toe lasting head; Fig. 4 is a transverse section in elevation, on a larger scale, showing the heel lasting head; Fig. 5 is a vertical longitudinal section of the heel lasting head on the line 5—5, Fig. 4, showing a last in position on the heel pin; Fig. 6 is a side elevation of the heel lasting carriage and other parts immediately associated therewith; Fig. 7 is a plan view of the heel carriage with the supplemental carrier and lasters removed; Fig. 8 is a transverse section in elevation of a portion of the heel lasting head, taken on the line 8—8 in Fig. 6, and looking in the direction of the arrow; Fig. 9 is a transverse section in elevation of a portion of the ratchet releasing lever for the heel head, the said section being taken on the line 9—9 in Fig. 6; Fig. 10 is a transverse section of the heel lasting head on the line 10—10 in Fig. 6; Fig. 11 is a plan in partial section of the heel lasting head with portions removed to show the heel band and the actuating devices therefor; Fig. 12 is a transverse section in elevation on the line 12—12 in Fig. 11; Fig. 13 shows in plan, on a still larger scale, the relation of the heel wipers to the lasters or grippers in one position; Fig. 14 is a similar

view showing the wiper and lasters or grippers in another position; Fig. 15 is a plan in section on the line 15—15, Fig. 17, showing the construction of the lasting or gripper-fingers; Fig. 16 is a transverse section in elevation taken on the line 16—16 in Fig. 15, showing the construction of one of the side grippers; Fig. 17 is a side elevation of the supplemental carrier and lasting or gripper fingers; Fig. 18 is a plan view, partly broken away, showing the construction of the wipers and wiper cams for the heel head; Fig. 19 is a detail in section taken on the line 19—19 in Fig. 18; Fig. 20 is a side elevation of the wiper cams; Fig. 21 is a central longitudinal section in elevation taken through the toe lasting head; Fig. 22 is a detail in perspective showing the mode of attaching the ends of the toe band or pad to its support; Fig. 23 is another perspective showing the toe band or pad; Fig. 24 is an end elevation of the toe lasting head looking from the center of the machine; Fig. 25 is a plan view of the hold-down; Fig. 26 is a detail in transverse section taken on the line 26—26 in Fig. 25; Fig. 27 is a plan showing one of the toe wipers and its cam carrier; Fig. 28 is a detail in section taken on the line 28—28 in Fig. 27; Fig. 29 is a similar section taken on the line 29—29 in Fig. 27; Fig. 30 is a perspective showing the relation of the toe lasters to the wipers in one position of the latter during the lasting operation; and Fig. 31 is a detail in sectional elevation showing the wipers and lasters in a different position.

While many features of the invention may have general application to lasting machines of widely varied types and of materially different construction from the machine herein disclosed, for the sake of illustrating one concrete embodiment of the invention, the same is shown as applied (Fig. 1) to a well-known type of bed lasting machine, to which general type, moreover, the invention in certain of its aspects has particular and special application.

In the machine shown (Fig. 1) the frame 1 is provided at the left with a suitable slide-way support 2 for the longitudinally adjustable toe lasting head 3, movable from left to right to accommodate shoes of different length by the adjusting screw 4 and hand wheel 5. At the opposite end of the machine

on the overhanging trackway 6 is a supporting carriage for the heel lasting head 7. The heel lasting wipers, indicated at 8, are opened and closed by the wiper lever 9, and are angularly adjustable longitudinally to accommodate the spring of the last by means controlled through the hand wheel 10 and adjustable transversely to accommodate the roll of the last by the hand wheel 11. Similarly, at the toe lasting head for opening and closing the toe wiper plates, represented at 12, there is provided the wiper lever 13, and for their angular adjustments longitudinally and transversely the hand wheels 14 and 15 respectively.

At the heel lasting carriage there is provided a heel pin 16 sustained (see Fig. 5) by the heel post 17, the latter adjustably supported as by the underlying inclined cam or wedge 18. In the employment of the machine the jacked shoe, designated at S (Fig. 5), is elevated on the said wedge by means controlled through the hand wheel 19 (Fig. 1) and its heel retracted into the heel band 20, the same movement of the hand wheel serving to draw the carriage toward the center of the machine where it is positioned by engagement between the pivoted latch 21 and the stationary catch 22 on the frame of the machine. The toe of the last, when thus positioned, is held over a toe pad 23, on the toe post 24, vertically slidable in the bracket 25 on the toe lasting head. The toe post rests upon a hinged table 26 controlled by an underlying cam and cam shaft. The details of the cam shaft are not herein shown, but may be of a construction well-known in machines of this type adapted, as well understood, when the shoe has been positioned as described, to be set in operation by pressure on the knee lever 27, to raise the toe pad 23 against the shoe and, at the same time, clasp the heel band about the heel of the shoe. The hold-down 28 being then drawn down against the upturned sole of the jacked shoe by means of the foot lever 29, the shoe is placed in readiness for the lasting operation. After the leather has been wiped over the insole and fastened thereto, the knee lever 27 is pressed again to turn the cam shaft, causing the toe pad to be dropped, the hold-down loosened and the heel lasting carriage released and moved back to its outer position along the track 6 which carriage movement, in turn, causes the heel band to open and the heel post to drop. These movements are well understood in lasting machines of this type, and the specific constructional details of the mechanisms producing them require no further illustration or explanation save in so far as they may incidentally relate to improvements herein subsequently described.

Referring first to the construction of the heel and toe lasting heads and the devices for adapting the wipers to the roll or swing of

the last, these will be best understood by reference to the heel lasting carriage and particularly to Figs. 4, 5, 7, 8 and 10. For the angular longitudinal wiper adjustment, the heel lasting carriage or base 7 (Fig. 5), which tracks upon the rollers 32, is provided at each side with upright ears 33 between which is hinged upon the transverse rod 34 the intermediate support or saddle 35. The latter comprises longitudinal arms connected by front and rear transverse members 36 and 37 respectively, which latter are formed to present curved segmental guideways (Figs. 5, 8 and 10) and afford a sliding support for the correspondingly fashioned flanged supporting portions 38 and 39, which depend from the wiper carrying support 40. The wiper support 40 can be angularly adjusted about a longitudinal axis through sliding movement of the segmental supporting flanges 38 and 39 on their curved guideways, which movement herein is imparted (Fig. 8) by a sliding rack block 41 located within a chamber 42 in the rear transverse saddle member 37, the block being provided on its upper face with teeth meshing with corresponding teeth on the under face of the supporting flange 39. The rack block may be moved in either direction from the position shown in Fig. 8 to tip the wiper support by turning the hand wheel 11 and the attached screw 43, the latter having threaded engagement with the walls of the saddle. The screw has a reduced portion adapted to turn freely in the block, but longitudinally fixed therein, by the collar 44 working in a transverse slot in the block. The supporting segments 38 and 39 are held in engagement with the guideways by flanged gibs 45 and 46 respectively, which overlie the curved upper faces of the flanged supports but are bolted to the guideway segments 36 and 37 respectively. For the angular adjustment of the wiper carrier, longitudinally and about the hinge 34 the flanged gib 46 is provided with a bracket 47 (see Figs. 5 and 7), which has threaded engagement with the vertical adjusting screw 48, the latter provided with the hand wheel 10 and having a combined swivel and pivotal connection, as at 49, to the carriage 7. It will be noted that the forward segmental guide 36 and its gib 45 provide a bearing for the sidewise rocking wiper-support extending close to the heel band and well under the sliding wiper carrying cams 50.

The construction of the devices for adjusting the wipers on the toe lasting head is substantially the same as that described in connection with the heel lasting head and will be readily understood from the drawings without further explanation.

Passing now to the construction of the wipers for the heel lasting head, these are carried on the usual wiper carrying plates

or cams 50, which latter are secured by means of the rearwardly extending links 51. Fig. 7, the cross-bar 52 and the tail piece 53 to the wiper operating lever 9, the latter (Fig. 7) pivoted to an arm 54 secured to the wiper support 40. As usual, the wipers are given a combined advancing and closing movement by the operating lever through the provision of curved cam slots 55 (Fig. 18) in the wiper plates with which are engaged rollers 56 carried on fixed studs, the latter connecting the underlying wiper carrier 40 and the overlying plate 57, between which the wiper plates are adapted to slide. While the wipers are usually arranged in symmetrical relation to the caps so that they close in from the same position relatively to the center line of advance, in lasting shoes where the swing of the last presents wide variations between rights and lefts, so that the inside shank of the last presents a deeply retreating face, it is often desirable to shift the inside wiper and swing it inward so that it will start to close farther in toward the center line of the head. One feature of the present invention lies in the provision of means for quickly adjusting either or both wipers for different swing of the lasts, as, for instance, for rights or lefts. Various ways of securing this adjustment may be employed, but herein a wiper seat is provided (Figs. 18 and 19) on the under face of each wiper cam 50 by means of a beveled lip or shoulder 58 which underlies the beveled edge 59 of the wiper plate 8. The beveled edge of the plate and the lip against which it fits, as viewed in plan (Fig. 18), are curved preferably about the center of curvature of the cam directing slots 55. Each cam carrier is provided with studs 61 and 62 which engage curved positioning slots 63 and 64 in the corresponding wiper, the said slots having the same center of the curvature 60, so that the wipers may, if desired, either or both be adjustably swung on the cams about the point 60 which coincides with the center of opening and closing movement. Each wiper plate is held adjustably fixed on its carrying cam by any suitable means such, for example, as the down turned locking pin 65 which engages a suitably shaped slot 66 in the outer edge of the wiper plate to hold the latter rigidly fixed. The pin, however, is carried by an arm 67 pivoted at 68 upon the wiper carriers and provided with the handle 69 and the removable positioning pin 70, which latter may be inserted in any one of several openings 71 in the wiper carrier to variously fix the position of the locking arm. With the positioning pins in the outer one of the openings 71 (as shown in Fig. 18), the wiper plates are held in their normal positions symmetrically arranged relatively to the central plane of the head and with their inner edges in con-

tact. By withdrawing its positioning pin 70 and turning its locking levers 67 to a different position, however, either wiper may be swung inwardly, as, for example, to the position shown by dotted lines in Fig. 18, thereby causing it to start and finish its closing movement nearer the center line of the last.

In the disclosed machine there are provided, in addition to the wipers, auxiliary lasting devices which act to increase the draft on the stock when wiped over the last, as well as to direct the draft inward over the shank and rearward toward the center of the heel seat, such auxiliary devices also herein preferably being employed to prevent the slackening of the stock when the wipers are backed off and partially withdrawn preparatory to applying the fastening. Herein the said auxiliary devices comprise (see Figs. 5 and 15) pairs of grippers 72 for increasing and directing the draft on the stock at the side of the heel near the shank, and additional grippers 73 for increasing the draft at the end or rear of the heel. Both pairs are mounted upon the supplemental head 74, hinged by the rod 75 to the heel lasting head so that they may be thrown up out of the way into the position shown in Fig. 5. The grippers are provided with down turned lips presenting gripping means, such as the points 76 and 77 respectively, which, when the head is turned down (Fig. 13) are adapted to penetrate and positively engage the stock in front of the working edges of the wipers and to be moved in and over the last (Fig. 14) in advance of the wipers. The side grippers 72 are removably bolted or screwed to the ends of fingers 78, provision being made for adjustment to accommodate different thicknesses of stock, by interposing one or more removable shims 79, and for longitudinal adjustment to change the reach of the grippers toward the shank of the last by providing a plurality of screw holes in the fingers. The fingers 78 are pivotally secured to and above the head 74 by means of studs 80 and have their rearwardly projecting ends drawn together by springs 81 which tend normally to spread apart the side grippers, as shown in Fig. 15.

The heel lasting grippers 73 are carried on arms 82 which have sliding movement between the head 74 and the underlying plate 83 (Figs. 4 and 5) secured thereto. When the heel grippers are advanced, as will be described, their movement is directed by rollers 84 carried by the rear ends of the arm 82 and engaging curved guideways 85 formed in the head, the guideways being located in such relation to the directing slots for the wiper cams that the heel lasting grippers execute a closing-in movement conforming to that of the wipers. The heel

lasters are normally retracted to the open position shown in Fig. 15 by the spring 86 having one end fixed to the head and the other connected in common to the pins 87 fastened one to each of the arms 82.

When the supplemental head 74 is turned down to use the lasters, the grippers 76 are guided into position (see Fig. 13) to overhang the front edge of the wipers by contact between the outer beveled edges of the down-turned gripper lips and the upright horn-shaped abutment 88 presented by the locking lever 67 on each wiper carrier. Likewise the grippers 73 are positioned to overhang the wiper edges by guiding contact with the beveled top edges of the upright pins 89 carried each by one of the wiper plates (see Figs. 5 and 18). In this position of the grippers, any closing-in movement of the wipers will be accompanied by a corresponding closing-in movement (see Fig. 14) of the grippers due to the pressure of the abutments 88 against the side grippers and the pins 89 against the heel grippers, the said pins and abutments acting as the means for advancing the grippers over the last.

Means are provided to depress the grippers at will and cause the points 76 and 77 to penetrate and grip the stock. This is accomplished by providing on the head 74 a cap plate 90 adapted to slide lengthwise the head. The cap plate is provided with shoes 91 underlying the edges of the head, which shoes present, each on its upper face, an incline adapted to engage with the under side of an overhanging ear 92 (see Fig. 7) the latter bolted to the plate 57 on the wiper support, so that, with the lasters turned down and the cap plate advanced, the inclined shoes will forcibly depress the entire supplemental head about its hinge and cause the laster points to dig into and take hold of the stock. To advance the sliding cap for the depression of the grippers, the cap has jointed attachment at 93 (Figs. 5 and 13) to the hand lever 94, the latter pivoted on the bracket 95 which is secured to the head 74.

Means preferably are provided and associated with the grippers to position or level the shoe with respect to the lasting devices and acting also to prevent such an approach of the gripper teeth to the insole as might cause them to penetrate too deeply and tear the stock. Such means are herein comprehended in a down hold foot comprising the adjustable head 96 carried by the threaded pin 97 depending from the bracket 98. The latter is supported by an arm 99 on the supplemental head between the lasters, so that the down hold may be depressed against the upturned insole at the heel seat and beyond the range of wiper action. By adjusting the head 96 on the pin, the penetra-

tion of the gripper into the stock may be regulated.

In the use of the heel lasters, the head having been swung down, the lasters assume the relation to the wipers represented in Fig. 13. The hand lever 94, being then swung over to the position shown in Fig. 14, causes the teeth of the lasters to grip the stock and, when the wipers are advanced, move from the position shown in Fig. 13 to that shown in Fig. 14. In executing this movement the heel lasters advance and close in substantial correspondence with the wipers supplementing the frictional hold of the latter. The side lasters, not only likewise increase the draft on the stock, but, being pivoted on the supplemental head and projecting (Fig. 13) well beyond the forward limits of the wipers, engage portions of the stock not initially touched by the wipers, which portions, however (see Fig. 14), are drawn or held back into the range of wiper action at the close of the wiper advance. With end wipers, as ordinarily used, the draft upon the stock, while inward over the insole, is also forward, this tending to slacken the stock overlying that portion of the last not reached by the wipers until near the close of their movement, as, for example, adjacent the inside shank portion of the shoe. Since the side grippers have a closing-in movement only, while the wipers both close in and advance, the side grippers act to draw the stock relatively toward the advancing wipers, preventing the forward draft, due to the advance of the latter, from slackening the stock over the fore portions of the heel seat. Thus, through the use of the auxiliary lasters, the stock from all sides of the heel, including the inside concaved portion of the shank, can be drawn in snugly toward and over the heel seat and can be broken down by the advancing wipers. Having wiped in the stock as described, the operator may now return the wipers to a position near the edge of the insole preparatory to applying the fastening. The depression of the lasters, due to the cam plate 90, causes them to remain fixed on the retraction and opening of the wipers, preventing such wiper movement from being accompanied by any slackening of the stock. With the wipers retracted, the lasting lever 94 may be swung back to release the lasters and the head 74 raised to permit application of the fastening.

In the case of lasts having an extreme swing, it will often be necessary to adjust the grippers so that the movement of the inside gripper, like that of the inside wiper, shall be started nearer the center line of the last. While such adjustment might be independent and separate, herein it is made automatically consequent on the adjustment of the wiper plates for, with either of the

latter shifted to one side of its normal position, when the head is depressed, the corresponding lasters will still find their proper positions by engagement with the abutment 88 and pin 89 and lie closely adjacent the active edges of the wipers, as shown in Fig. 13. The beveled top of the pins 89 and of the horn 88 is so shaped that the lasters are correctly positioned and properly advanced in whatever position of adjustment the wiper plates may be placed.

Referring now to the heel band 20 for the heel lasting head, the same comprises (Figs. 5 and 11) a pad or facing of leather or other suitable material supported by the flexible sprocket chain or carrier 100. The latter is suitably supported by the rearwardly directed pin 101 on which it is hinged by the link 102 so as to rock slightly for adaptation to the last. The pin is adjustably held in the wiper support by the set screw 103. The ends of the pad carrier are jointed to the pad supporting fingers 104 (see Figs. 5, 7, 11 and 12) which are pivoted to the ends of the pad supporting arms 105, the latter being slidably mounted in the wiper support 40. The supporting arms are advanced to clasp the pad about the heel by means of the connected cross bar 106, the latter rigidly secured, as by the stud 107 and pin 108 (Fig. 11), to the sliding actuating bar 109. The actuating bar is connected to be moved by the cam shaft of the machine through suitable connections, such as the spring 110 and lever 111, the latter moved by the plunger rod 112 actuated by a cam (not shown), as is customary in this type of machine. The cross bar 106, being rigidly fixed on the actuator bar 109, the sliding arms are advanced equally and together. Means, however, are provided to cause the arms to turn to one side or the other, if necessary, to permit the pad to conform to the swing of the last. To effect this, the studs 113, which connect the arms to the cross bar, work in slots 114 and each arm 105 fashioned to slide on a guiding block 115, the latter pivoted to turn on the wiper support 40, but secured beneath the same to a rearwardly projecting arm 116, which has an end contacting with the inclined face 117 of a wedge bar 118. The latter is secured to the under face of the cross bar 106 by the stud 107, but is permitted sliding movement lengthwise the bar by provision of the slots 119 and guide rollers 120 (Fig. 12). As the cross bar is advanced, the wedge acts to turn the guiding blocks 115 and swing the supporting ends of both arms 105 inwardly to clasp the ends of the pad about the last. Springs 121, connecting the lower ends of the roller studs and depending pins 122 on the ends of the arms 116, normally tend to keep the wedge central and the band symmetrical relatively to the axis of

the head. If the heel band, however, requires to be shifted to meet the swing of the last, the resistance to the advance of the wedge on one side or the other causes it to slide crosswise and turn the guiding blocks 70 unequally to give a differential swing to the supporting arms and automatically adapt the pad to the heel.

After the shoe has been jacked, as previously described, it is usual to provide means such as the elevating rod 122 to press the last up against the wipers. The rod herein is elevated by the foot treadle 123 (Fig. 1) to cause the upper end thereof (Figs. 4 and 5) to engage with the overlying lateral horizontal straight ledge 124 on the elevating wedge 18 and thereby lift the heel post and last. To permit this the wedge 18 is pivoted at 125 to the heel lasting head on the forwardly adjustable support 126, the forward end of the cam being yieldably supported by the preferably light spring 127. The wedge may be adjusted lengthwise the carriage to vary its lifting effect on the heel post by the segmental pinion 125*, meshing with a rack 126* on the under side of the wedge support 126 and controlled (Fig. 6) by the external wedge controlling lever 127* (Fig. 1). Since the ledge 124 is of sufficient extent to overlie the elevating rod for all positions of the wedge, the rod engages with the latter irrespective of the adjustment of the wedge.

The lifting rod treadle 123 is provided (Figs. 1 and 2) with the pawl 130 cooperating with the ratchet 131 so as to maintain the up-pressure on the last without further exertion on the part of the operator. To provide for the automatic release of this up-pressure coincidentally with the release of the carriage and the dropping of the toe post, there is provided the treadle releasing arm 132 adapted to be moved to release the pawl from the ratchet. The arm is fixed on the rock shaft 133 (Fig. 2) and is given a releasing movement on movement of the carriage-releasing knee lever 27, which latter, when moved to release the carriage, engages with the finger 134 located back of the knee lever and secured to the rock shaft 133. Movement of the knee lever acts to release the carriage (Fig. 4) through the upright rod 135 connected to throw the bell-crank lever 136 pivoted on the frame of the machine. When thrown, the lever 136 causes a roller 137 to strike the latch 21 and free the same from the catch 22, Fig. 6.

The last support when elevated and retracted in the heel lasting head is retained in such condition by the pawl 137* (see Figs. 4 and 6) which engages with ratchet teeth 138 on the inside face of the hand wheel 19. The pawl is carried on the depending lever 139 which is pivoted between ears 140 on the journal for the hand wheel shaft. The pawl 139

is pressed into engagement by the spring 142 (Fig. 9), but is thrown out of engagement to effect automatic release of the heel band and the lowering of the last support when the roller 143 (Fig. 9) on the lever 139 meets the curved top edge of the cam plate 144 fixed to the side of the trackway 6. To provide for the release of the hand wheel at any time by the operative independent of the carriage position, the pawl carrying lever is prolonged at its lower end and carries the portion 145 adapted to be pressed by the knee of the operative at any time to effect the release of the hand wheel.

Turning now to the toe lasting head, the toe lasting devices are mounted upon the wiper support 146, which is adjustable by means of the hand wheels 14 and 15 in substantially the same fashion as described with reference to the heel lasting head. The wiper plates 12 (Figs. 21 and 27) are supported upon cam carriers 147, and the latter are given a combined advancing and closing-in movement by means of the sliding actuating bar 148 and wiper lever 13 in the usual manner. Means are provided, however, for removably securing each wiper plate to its carrier so that, while rigidly seated thereon, it may be quickly detached for the substitution of a wiper of different shape. Herein (Figs. 27, 28 and 29) the under face of each cam plate 147 is provided with a recessed shoulder 149 and the rear edge of the wiper plate is fashioned to seat against said shoulder and against the flat under side face of the carrier. To removably hold the wiper against its seat, the lateral edge of the wiper is beveled as at 150 (Fig. 28) and is engaged by the underlying beveled lip 151 of the clamping member 152, which latter, being pivoted upon the carrier as at 153, may be swung into or out of engagement with the wiper edge. The clamp also has the shoulder 154 which swings over the shouldered edge 155 of the carrier, and it acts, therefore, not only to seat the wiper in the recessed shoulder 149, but also to force or wedge the wiper against the adjacent flat face of the carrier. When the clamp is swung away from the wiper the latter may readily be withdrawn from its seat. To force and hold the clamp in its clamping position suitable means are provided, such as the pivoted cam lever 156, the suitably fashioned end of which is adapted to engage the lug 157 projecting from the edge of the wiper carrier. The cam lever when drawn to the position shown locks the clamp against the wiper, but movement of its free end outward will act to release the clamp lever.

In the disclosed lasting machine the toe lasting head, like the heel lasting head, is provided with lasting devices supplementary or auxiliary to the wiper plates, and, like

the auxiliary heel lasting devices, these are also mounted upon a supplemental head 158 pivoted at 159 to the cap plate 160 overlying the toe wiper cams. The auxiliary lasting devices for the toe head comprise the lasting arms 161 (Figs. 21, 24 and 30), carrying at their free outer ends the work engaging members 162 which, when the head is turned down, are adapted to rest upon the overturned edges of the stock. These members 162 are preferably formed so that when turned into operative position, they will rest at one portion of their length upon the out-turned material on top of the wipers, and at another portion press upon the out-turned material at the edge of the wiper or even on the insole in front of the wiper edge. The outer longitudinal edge of these auxiliary devices is preferably beveled or cut away, as at 162', Figs. 30 and 31, so that as the wipers move in they may readily wedge under the out-turned material and auxiliary lasting devices, lifting the latter if necessary. Of course, if desired these auxiliary lasting devices may be formed to rest upon the out-turned material above or on top of the wipers throughout their length. The arms are pivoted at 163 to the supplemental head, so that the members 162 are permitted a closing-in movement with the wipers, although normally drawn out against the adjustable stop screws 164 (Fig. 24) by the springs 165 attached each at one end to an arm and at the other end to the head. The work engaging members 162 are removably secured to the ends of the fingers 161 by screws 166 and with interposed shims, so that members of different shapes may be supplied to accommodate different forms of wipers or suit different conditions of use. The work engaging members are herein arranged to increase the frictional hold of the wipers, especially near those advanced portions which work at the side of the toe, without, however, affecting the smooth wiping action of the under or active wiper faces. To this end the under or active faces of the work engaging members 162 are so fashioned or equipped that when depressed against the overturned edge of the stock above the wipers, as represented in Fig. 30, they act to pinch the stock against the wipers and act to increase the draft on the stock by retarding its slippage over the wiper edges as the latter advance and close in. In the illustrated instance the lower edges of the work engaging members are merely roughened, although obviously they may be provided with teeth or faced with leather or other friction material according to the nature of the work and the conditions of use.

The supplemental head is provided with devices to depress and apply the lasting members 162 to the work. These comprehend the sliding cap plate 167 controlled by

the hand lever 168 and constructed substantially the same in this respect as the supplemental carrier in the heel lasting head, so that, when turned down, the hand lever may be moved to cause the cap plate 167 to engage the overlying ears 169 and depress, and hold depressed, the grippers 162 against the stock. The arms 161 are preferably constructed with more or less resiliency so that, when depressed, the work engaging members exert a firm but suitably yielding pressure against the stock.

When the auxiliary toe lasting devices are employed, with the shoe positioned and ready for the wiping operation, the free edge of the stock is reversely laid over the wiper edges, as represented in Fig. 30, and the lasters then depressed to pinch the stock against the wipers. If the wipers are then closed in they stretch and lay the stock over the insole as usual, but with the additional draft imparted by the yielding grip of the overlying work engaging members. As the wipers move in, and the stock slips over the edge of the wipers, the stock as well as the in movement of the wipers, tends to draw the lasting arms in more or less (see Fig. 31) against the opposing pull of the springs 165 by the friction-creating pressure of the lasters against the wipers. With the stock wiped in as described, the lasters may be released by the hand lever 168 and thrown back out of the way to permit retraction of the wipers and the application of the fastening.

In the usual lasting machine employing end wipers it is difficult, particularly at the toe, to avoid a tendency of the stock to slacken and loosen at the sides of the last, as for example, at or adjacent the toe cap seam when the toe is lasted. This is not only due to the fact that the inward draft of the wipers is the least effectual at the sides of the toe and adjacent the advanced portions of the active wiper edges, but also to the fact that, with the wipers advancing as well as closing in, there is an extreme draft rearward and away from the tip, which tends to work the stock from the tip rearward and to loosen it at the sides beyond the range of the wipers. The described construction of auxiliary lasters not only obviates this by increasing the frictional grip of the wipers at their most advanced edges where most needed, but, since the lasting arms 161 are pivoted to the supplemental head and do not advance with the wipers, the work engaging members, while augmenting the inward draft, tend to hold back the stock at the sides of the toe and prevent it from being stretched or drawn away from the tip with and in the direction of wiper advance. It will be obvious that these described features of the invention, while of particular importance in lasting the toe, are

not limited in their application to toe lasting devices, but may be employed, if desired, in connection with the lasting devices for the heel.

In conjunction with the toe lasting devices there is preferably employed a hold-down adapted to engage the insole between the wiper plates. Such hold-down is herein pivotally mounted on the usual swinging arm 170 (Figs. 1 and 25) secured to the upright rod 171 and normally swung outward to throw the hold-down away from the last by means of the spiral spring 172. The hold-down arm 173 (Fig. 25) is pivoted to the end of the swinging arm 170 and carries two insole-engaging members 174 suitably shaped to engage the insole between the wipers. The members 174 are each mounted upon a lever arm 175 pivoted at 176 to the arm 173, and normally spread apart by the spring 177 to the position shown in Fig. 25 where the stops 178, on the levers, abut against the arm. This provides means for adjusting the insole engaging portion of the hold-down to apply it to toes of varying widths, for the operative, in applying the hold-down, can grasp the levers 175 and draw the insole-engaging portions toward each other to adapt them to a narrow toe or allow them to spread apart to cover any desired insole area, limited only by the location of the stops 178. In order to provide for an even pressure against the insole by the hold-down, each member 174 is preferably secured to its lever by means which permit relative rocking movement, such, for example, as the spherical seat 179 (Fig. 26), connection being maintained by the rivet 180. This permits the hold-down to adapt itself to insoles of varying curvature and shape due to the variations in the spring of the last, the stop 174* being provided to limit swinging movement of the plates 174 by contact with the arms 175 and maintain the plates in alinement with the shoe. The hold-down, when swung over the last, may be drawn forcibly down against the insole and there locked by the foot treadle 29 suitably shaped to engage the teeth on the holding ratchet 203. The ratchet, however, is mounted to swing away from the foot treadle and release the hold-down when the rod 135, to which it is connected, is elevated. The upper end of the rod is connected to the knee releasing lever 27 (Fig. 4) so as to be raised for the release of the hold-down simultaneously with the release of the heel lasting carriage and the elevating rod 122.

While many features of this invention are not limited to any particular type of lasting machine, the machine herein shown is of the class employing a vertically movable toe lasting head where, as a preliminary step to the closing in movement of the wipers, the stock is first wiped up about the sides

of the toe by the wiper plates or a suitable toe pad, or both. In the present machine there is shown, as a means for effecting the wiping up action, the toe pad 181, Figs. 21 and 23, which, as the lasting head is elevated, is caused to wipe up the leather about the last and also there to retain it when the wiping plates subsequently advance to break it down over the insole. The pad 181 comprises a facing preferably of leather or other suitable friction material, removably secured as a facing for the flexible sprocket 182. To readily remove the pad for the substitution of differently shaped ones, the ends of the pad (Figs. 22 and 23) are provided with U-shaped clips or brackets 183 which, with the pad as positioned, may be slid longitudinally into a slot 184 in the attachment 185. The bottom of the clip enters the slot, while the side thereof lies against the side of the attachment, acting thereby rigidly to support the ends of the pad. The center of the pad is supported by an underlying segmental shelf or bracket 186 projecting from the sprocket 182 under the rear portion of the pad and provided with a spring-pressed latching pin 187, which, with the pad positioned, may be snapped into an opening in the metal clip 188 secured to the bottom of the pad. By merely withdrawing the pin 187 the pad may be withdrawn longitudinally for the substitution of another. The attachments 185 at the outer ends of the pad are supported, as are also the ends of the sprocket (see Fig. 24), by pivoted supporting fingers 189 and sliding supporting arms 190 (Fig. 24) which connections, together with the cross bar 191, Fig. 21, and the equalizing wedge 192, may be and preferably are of substantially the same construction as the supporting devices for the heel lasting pad. The toe pad, however, is adapted to be clasped about the toe for the wiping up action by means of the pad clasp lever 193 (Figs. 1 and 21), which is pivoted on the wiper support 146 and jointed to the pad actuating bar 194 (Fig. 21), so that, by movement of the lever, the ends of the pad may be clasped about the toe of the last. The pad clasp lever is provided with a hand latch 195 which controls a pawl 196 adapted to engage with the fixed ratchet 197, so that the pad, when closed in to any given position, may be there retained. In order to adjustably advance the pad, the center of the pad carrier is supported upon the rearwardly extending rack bar 198, which latter is provided with teeth meshing with the pinion 199 connected (Figs. 21 and 24) to be turned by the hand lever 200 at the side of the toe lasting head. The lever is provided with a spring-pressed latching pin 201 engaging the teeth of a ratchet plate 202, so that the lever may be turned and

held by its pawl in any desired position, thereby advancing or retracting the pad.

Provision is made for raising and lowering the toe lasting head by means of the foot treadle 203 (Figs. 1 and 3), which latter is connected to rock the transverse elevating shaft 204 and raise the rod 205. The latter is connected at its lower end by an arm to the rock shaft and at its upper end to a sliding head 206 which is mounted to slide in vertical ways 207 and connected to the lasting head support 2.

In the operation of the machine the toe lasting head, having been properly positioned with reference to the toe of the shoe to be lasted, and with the wipers below the level of the insole, the toe pad 181 is tightly clasped about the sides of the toe and there locked by the pad lever 193. The wiper plates are then moved, in by the wiper lever 13 to bear against the sides of the toe, and the auxiliary work engaging members 162 are applied to the stock and depressed, as previously described. The entire toe head is then elevated by pressure on the foot treadle 203, the friction of the toe pad acting to wipe up and stretch the stock about the sides of the toe. The operative, holding the wiper lever to press the wipers inward, causes the wipers to close in as soon as he feels them rise above the edge of the insole and thereby wipes the leather in over the insole. As the wipers are closed, foot pressure is shifted from the elevating treadle 203 to the depressing treadle 206 so as to press the in-closing wipers down against the stock. With the toe pad still clasped, thereby preventing slackening of the leather, the wipers may be retracted for the application of the fastening, after which the pad may be unclasped and the lasted shoe unjacked, as previously described. The action of the wipers, as described, often tends to leave the stock somewhat rounded over the shouldered edge of the insole. In order to lay the stock perfectly flat in the shouldered edge (see Figs. 30 and 31) the wipers are preferably closed in again over the insole shoulder after the stock has been fastened and a heavy downward pressure applied to crease the leather over the edge of the insole and flatten it into the shoulder thereof. For this purpose, prior to the unjacking of the shoe, but after the application of the fastening and the unclasp of the toe pad, the wipers are again closed in and forcibly depressed against the fastened stock. While this can be accomplished to some extent by means of the depressing treadle 206, to make this step sufficiently effective there is herein employed additional depressing means of greater leverage and adapted to exert a greatly augmented downward pressure on the head. Such means are herein comprehended in the manually movable depressing lever 209

loosely mounted in the rock shaft 204 and normally held in the position shown against the stop 211 by the spring 210. The rock shaft, however, has fixedly secured thereto the segmental ratchet 212, and, when it is desired to depress the head with the increased power required to flatten the stock, the operative, by grasping the lever handle 213, can move the adjacent hand latch 214 and, by the link connection shown, apply the pawl 215 to the ratchet to lock the lever to the rock shaft and turn the latter to depress the lasting head.

As previously stated, many of the features herein described are applicable to lasting machines of other types than the one herein shown. It is also to be understood that, while the various features of the invention have, for illustrative purposes, been shown embodied in a concrete machine, the invention is not limited either to the machine shown, or to the details of construction or the form or relative arrangement of parts, but that extensive deviations may be made therefrom without departing from the spirit of the invention.

What is claimed is:

1. In a lasting machine, the combination of a last support, end wipers, auxiliary lasting devices movable into operative position for engaging the work in front of the wipers, and means for guiding the auxiliary lasting devices into engagement with the work as they are moved into operative position.

2. In a lasting machine, the combination of a last support, end wipers, side auxiliary lasting devices for engaging the work in front of the wipers, means for adjusting a wiper toward and from the center of the last and for correspondingly adjusting the associated auxiliary lasting device.

3. In a lasting machine, the combination of a last support, wiper carriers, end wipers associated therewith, side grippers for positively engaging the work in front of the wipers, means for adjusting a wiper with relation to its carrier and for correspondingly adjusting the associated gripper.

4. In a lasting machine, the combination of a last support, end wipers, side grippers and end grippers to positively engage the work in advance of the wiper edges, and means for causing closing and opening movements of the wipers and side and end grippers over the shoe sole.

5. In a bed lasting machine, the combination of a last support, end wipers, side grippers and end grippers to engage the work in advance of the wiper edges, and means to move said grippers inwardly over a shoe sole simultaneously with and immediately in advance of the acting edges of said wipers.

6. In a lasting machine, the combination of a last support, end wipers, grippers for

positively engaging the work in front of the wipers, arms carrying said grippers, means for adjusting the grippers on said arms and means for moving the wipers and grippers over the sole of a shoe sustained by said support.

7. In a lasting machine, the combination of a last support, end wipers, grippers having teeth for positively engaging the work in front of the wipers, and means to adjust the grippers to regulate the penetration of said teeth.

8. In a lasting machine, the combination of a last support, wiper carriers, end wipers associated therewith, side grippers for positively engaging the work in front of the wipers, a gripper carrier for swinging the grippers into and out of operative position, means for adjusting an end wiper with respect to its carrier toward and from the center of the last, and means controlled by said adjusting means to correspondingly adjust the associated gripper when said grippers are moved into operative position.

9. In a lasting machine, a last support, end wipers, side grippers and a plurality of end grippers to engage the outside of the work and movable with and in front of the wipers in their closing or wiping movements.

10. In a lasting machine, the combination of a last support, end wipers, grippers for positively engaging the work on the same side as and in front of the wipers, said wipers and grippers constituting lasting devices, and means associated with the grippers to engage the insole and level it with respect to the lasting devices.

11. In a lasting machine, the combination of a last support, end wipers, a gripper carrier and grippers mounted thereon, and adapted to engage the work in front of the wipers, said wipers and grippers constituting lasting devices, and adjustable means carried by the gripper carrier to engage the insole of a shoe sustained on said support and position it with respect to the lasting devices.

12. In a lasting machine, the combination of a last support, end wipers, a gripper carrier having grippers and a foot mounted thereon to swing together toward and from the last support said grippers engaging the work in front of the wipers, said foot engaging the insole between the grippers, and means to force said foot downward to position the work after the grippers and foot have been swung into operative relation therewith.

13. In a bed lasting machine, the combination with wiper carriers, means to impart a combined advancing and closing movement to the carriers, of wiper plates supported by the wiper carriers, a locking pin mounted to swing on each end wiper carrier and engaging a wiper plate for adjusting the plate on

the carrier relative to the line of advance and a handle for swinging each locking pin.

14. In a bed lasting machine, the combination with wiper carriers, means to impart a combined advancing and closing movement thereto, wiper plates carried by said wiper carriers, a locking pin mounted to swing on each wiper carrier and engaging a wiper plate for adjusting the plate on the carrier about a center substantially co-incident with the center of opening and closing movement of the wiper carriers, and a handle for operating each locking pin.

15. In a bed lasting machine, the combination with wiper carriers, of wiper plates thereon, means for locating said plates on said carriers comprising slots curved from a center coincident with the center of opening and closing movement of the wiper plates, and slot engaging pins by which the plates have sliding adjustment upon the carriers, and means for adjustably holding the said plates by said locating means.

16. In a lasting machine, the combination with a wiper carrier, of a wiper plate removably secured thereto, and a clamping member having a recessed edge to engage the adjacent edge of the wiper plate to removably hold the plate on the carrier.

17. A lasting machine having a wiper carrier, a wiper removably connected thereto, and a clamp for engaging the exterior edge portion of the wiper for retaining it on the carrier, said clamp and wiper having correspondingly beveled engaging edge portions.

18. In a lasting machine, the combination of a heel lasting carriage, a last support, an inclined rest for said support and having a longitudinally extending flange, means for causing relative longitudinal movement between the inclined rest and last support, and an elevating rod adapted to engage said longitudinally extending flange.

19. In a lasting machine, the combination of a heel lasting carriage, a last support, an inclined rest for said support and having a longitudinally extending flange, means for causing relative longitudinal movement between the inclined rest and last support, an elevating rod adapted to engage said longitudinally extending flange, and ratchet and pawl means for locking the elevating rod.

20. In a lasting machine, the combination of a last support, end wipers, means for operating the wipers, and separate means disposed one at each side of the last support for pressing the work against the end wipers to increase the effective wiping action of the wipers as they pass beneath said means.

21. In a lasting machine, the combination of a last support, end wipers, means for operating the wipers, and yielding means comprising auxiliary lasting members, one co-operating with each end wiper at opposite sides of the last support for pressing the

work against the end wipers to increase the effective wiping action of the wipers as they pass beneath said means.

22. In a lasting machine, the combination of a last support, end wipers, means for operating the wipers, and auxiliary lasting members one for each wiper for pressing the work against the end wipers to increase the effective wiping action of the wipers as they pass beneath said means, said auxiliary lasting members having a beveled or sloping edge to permit the wipers to wedge beneath the auxiliary lasting devices as they move inward.

23. In a lasting machine, the combination of a last support, end wipers, means for operating said wipers, and auxiliary side lasting devices, one for each end wiper, said auxiliary lasting devices having friction engaging faces to engage the material of the upper and hold it against the end wipers, and means to permit movement of the auxiliary lasting devices with the respective end wipers as they move inward.

24. In a lasting machine, the combination of a last support, end wipers, means for operating said end wipers, separate and independently movable auxiliary lasting members coöperating with said wipers at the side of the shoe to hold the material against said wipers, and means permitting the auxiliary lasting devices to be adjusted to aline with the shoe.

25. In a lasting machine, the combination of a last support, end wipers, means for operating the end wipers, separate auxiliary lasting members coöperating with each of said wipers at the side portions of the shoe to hold the material against said wipers as they move inward, and supporting means for said auxiliary lasting members to permit them to be moved independently by the end wipers during the wiping action.

26. In a lasting machine, the combination of a last support, side wiping means for wiping the upper material of a shoe inward, separate auxiliary lasting members for said wiping means to hold the material against the wiping means during the wiping action, and a head carrying said separate auxiliary lasting members and mounted to swing said auxiliary lasting members into and out of operative position with respect to the wiping means.

27. In a lasting machine, the combination of a last support, wiping means for wiping the upper material of a shoe inward, auxiliary lasting members mounted to contact with the upper material and hold the same against the wiping means, and means for adjusting the auxiliary lasting devices toward and from the center of the shoe sole sustained by said last support.

28. In a lasting machine, the combination of last supporting means, wiping means for

wiping the upper material of a shoe inward, independently movable auxiliary lasting members, arms carrying said members, and means for independently adjusting the arms to move said members relatively inward.

29. In a lasting machine, the combination of a last support, end wipers, and a hold down comprising pivotally mounted bearing arms each carrying an insole engaging member, and means normally acting to separate said members.

30. In a lasting machine, the combination of a last support, end wipers and a hold down comprising bearing arms each carrying an insole engaging member loosely mounted thereon, and means normally acting to separate said members.

31. In a lasting machine, the combination of a swinging arm, a hold down arm jointed thereto and carrying bearing arms, and a loosely sustained sole engaging member carried by each of said bearing arms.

32. In a lasting machine, the combination of a swinging arm, a hold down arm jointed thereto and carrying bearing arms, and a sole engaging member carried by each of said bearing arms, said sole engaging members being conformable to the sole of the shoe being lasted.

33. In a lasting machine, the combination of last supporting means, wiper means, a hold down arm carrying bearing arms, a sole engaging member carried by each of said bearing arms, and adapted to swing with relation thereto, and stops to maintain said members in alinement with the general longitudinal direction of a shoe sole sustained by the supporting means.

34. In a lasting machine, the combination of a last support, end wipers, a flexible member adapted to conform to the shape of the shoe at the end thereof, a facing pad for said flexible member, supporting fingers for said flexible member and pad, depending supports carried by the supporting fingers, and means connected to the pad for detachably engaging said supports.

35. In a lasting machine, the combination of a last support, wiping means for wiping the upper material of a shoe inward, a pad for engaging the end portion of a shoe sustained by said support, means for moving the wipers and pad upward about the shoe in drawing the upper to the last, and manually controlled means for bodily adjusting the position of said pad with relation to the wiping means in a direction longitudinally of the shoe to adjust the same for different lengths thereof.

36. In a lasting machine, the combination of last supporting means, wiping means for wiping the upper material of a shoe inward, a flexibly sustained pad for engaging the end portion of a shoe sustained by said support, means for moving the pad upward

about the shoe in drawing the upper to the last, a bar for centrally supporting said pad, and means for adjusting said central supporting bar in a direction longitudinally of a shoe sustained by said supporting means to position the pad longitudinally for different lengths of shoes.

37. In a lasting machine, the combination of last supporting means, wiping means for wiping the upper material of a shoe inward, a flexibly sustained pad for engaging and conforming to the end portion of a shoe sustained by said support, a rack bar for supporting said pad, a pinion engaging the rack bar, and hand operated means for operating the pinion to position the pad longitudinally with relation to the wiping means for different lengths of shoes.

38. In a bed lasting machine, the combination with a heel lasting head, and last supporting means, of heel lasting wipers and auxiliary lasting devices or grippers on said head, and means for adjusting the wipers and grippers on the head for use with rights or lefts.

39. In a bed lasting machine, the combination with wiper carriers, wiper plates, means for locating the plates upon the carriers, comprising inter-engaged curved wall portions through which the plates have sliding adjustment upon the carriers, and means for moving and for holding each plate in its selected position of adjustment, comprising a cooperating slot and locking pin, one upon the plate and the other upon the carrier.

40. In a lasting machine, the combination with a last support, a pair of wipers and cooperating grippers, means to advance and close the same, and means to adjust one wiper with relation to the other to start its closing movement near the center line of advance, and means to correspondingly determine the path of the gripper movement.

41. In a lasting machine, a heel lasting head having end wipers, means to cause the said wipers to advance and close in, and means to exert an inward draft on the stock at the fore-portions of the heel while the wipers are advanced.

42. A lasting machine having a last support, end wipers, and positive work-engaging means for the heel, positive work-engaging means for the side, and means to advance the heel engaging means relatively to the side engaging means.

43. A lasting machine having a lasting head, wiping means, pivoted work-engaging devices mounted on the lasting head, means to advance the wiping means relatively to the work-engaging devices and simultaneously to cause movement of the latter about the pivots on the lasting head.

44. A lasting machine having wiping means, positive work-engaging means, and projecting devices on the wiping means to

cause closing-in movement of the work-engaging means.

43. A lasting machine having wiping means, work-engaging means adapted to be moved simultaneously with said wiping means, and means for adjusting the work-engaging means for rights or lefts.

46. In a lasting machine, a shoe support, end wipers, a pad having pivoted end supports, slidable members carrying said end supports, and means both to advance and differentially swing said slidable members.

47. In a lasting machine, a shoe support, end wipers, a pad having pivoted end supports, supporting means for said end supports mounted for movement toward and from said pad, and means to differentially move said supporting means toward or from the pad.

48. In a lasting machine, shoe supporting means, end wipers, a pad having end supports for the same, and wedge equalizing means for differentially moving said supports.

49. In a lasting machine, shoe supporting means, end wipers, a pad, pivoted end supports, means to advance said supports, and means also to move said supports with their pivots yieldingly and differentially toward or away from the pad.

50. In a lasting machine, shoe supporting means, end wipers, a pad, slide bars for supporting the end of the pad, means to advance said slide bars, and means automatically conformable to the shape of the last to swing said slide bars toward or away from the pad.

51. In a lasting machine, shoe supporting means, end wipers, a hold down, means to exert a pressure on the last toward the wipers, means to release the hold down, and means simultaneously to relieve the pressure on the last.

52. In a lasting machine, a longitudinally movable lasting head, a hand wheel on the head for positioning the last, a ratchet and pawl for locking the hand wheel, a depending pawl releasing lever, and a cam on the machine frame for actuating the releasing lever.

53. In a lasting machine, the combination with a last support and end wiping means to wipe the upper material inward, of means independently movable with and by each of the wipers to increase the frictional hold thereof upon the stock during the wiping action.

54. In a lasting machine, the combination with wiping means at each side of the shoe end portion, of pivoted and independently movable work-engaging means coacting with the wiping means at each side of the shoe to pinch the stock against the wiping means, said work engaging means being movable with and by the wiping means.

55. In a lasting machine, the combination with a pad, of pad supporting means having means for supporting the pad thereon while permitting free longitudinal withdrawal of the pad.

56. In a lasting machine, the combination with a toe lasting head, of a toe pad, toe lasting wipers, and means for longitudinally adjusting the toe pad independently of the wipers.

57. In a lasting machine, the combination of a last support, end wipers to wipe the upper material inward, auxiliary lasting devices, carriers for said devices on which said devices are adjustably mounted, and means to permit the said devices to engage the upper material in front of the wipers and be moved inward by the wiper movement.

58. In a lasting machine, the combination of a last support, end wipers, levers for adjusting the end wipers, auxiliary lasting devices, means connected to said levers for positioning the auxiliary lasting devices as they are moved into operative position, and means to move the wipers and auxiliary lasting devices inward.

59. In a bed lasting machine, the combination of a last support, end wipers to wipe the upper material inward, grippers extending forward and beyond the wipers, pivotally mounted arms carrying said grippers, and means for moving the wipers and grippers inward.

60. In a lasting machine, the combination of a lasting carriage, a wiper carrying support, a saddle or intermediate support pivotally connecting the lasting carriage and wiper carrying support, segmental guides sustained by said saddle or intermediate support, complementary portions connected to the wiper carrying support and engaging said segmental guides, a sliding rack block having operative engagement with the wiper carrying support, and means for sliding said block.

61. In a lasting machine, a shoe support, a head, wipers on said head for acting at each side of the end of the shoe to lay the upper over the sole, a pad carried by the head and having pivoted end supports, slidable members carrying said end supports, means to advance and swing said end supports, separate means for operating the wipers, and means for raising the head while the pad is in contact with the shoe.

62. In a bed lasting machine, the combination of a head, end wiper plates carried by the head, a flexible pad also carried by the head, independent hand levers for operating the wiper plates and closing the pad about the end of a shoe, means for tilting the head longitudinally and transversely to properly position the wiper plates and pad with respect to the bottom surface of the last, and means for raising the head bodily and with

it the pad and wipers when the pad is closed against the end of the shoe and for bodily lowering the head.

63. In a bed lasting machine, the combination of a base, a lasting carriage thereon, a wiper carrying support carrying wiper plates, shoe supporting means, a saddle pivotally connecting the lasting carriage and wiper carrying support, and an interlocking arc-shaped rib and groove connection located between the lasting carriage and wiper carrying support to permit lateral rocking movement of the wiper carrying support and direct that movement about an axis extending lengthwise of the shoe and located substantially in the plane of the bottom face thereof, one member of said interlocking arc-shaped rib and groove connection being mounted on the pivotally supported saddle which connects the lasting carriage and wiper carrying support, and the other on the wiper carrying support.

64. In a bed lasting machine, the combination of a base, a lasting carriage thereon, a wiper carrying support carrying wiper plates, shoe supporting means, a saddle pivotally connecting the lasting carriage and wiper carrying support, an interlocking arc-shaped rib and groove connection located between the lasting carriage and wiper carrying support to permit lateral rocking movement of the wiper carrying support and direct that movement about an axis extending lengthwise of the shoe and located substantially in the plane of the bottom face thereof, one member of said interlocking arc-shaped rib and groove connection being mounted on the pivotally supported saddle which connects the lasting carriage and wiper carrying support, and the other on the wiper carrying support, and an adjusting device carried by the saddle for tilting the wiper carrying support.

65. In a bed lasting machine, the combination of a base, a lasting carriage thereon, a wiper carrying support carrying wiper plates, shoe supporting means, a saddle pivotally connecting the lasting carriage and wiper carrying support, and an interlocking arc-shaped rib and groove connection located between the lasting carriage and wiper carrying support to permit lateral rocking movement of the wiper carrying support and direct that movement about an axis extending lengthwise of the shoe and located substantially in the plane of the bottom face thereof, one of said interlocking connections being disposed adjacent the pivotal point of the saddle and the other near the other end of the saddle, and one member of each of said interlocking connections being mounted on the saddle and the other on the wiper carrying support.

66. In a bed lasting machine, the combination of a lasting head carrying end wipers

and a pad, treadle means for raising the head to cause the wipers to lay the upper about the end of the last and to lower the head to cause the wipers to act close to the plane of the bottom of the last in laying the edge of the upper over the last, and additional means to powerfully depress the head while the wipers are over the bottom of the last to lay the stock flat.

67. In a bed lasting machine, the combination of a lasting head carrying end wipers and a pad, treadle means for raising the head to cause the wipers to lay the upper about the end of the last and to lower the head to cause the wipers to act close to the plane of the bottom of the last in laying the edge of the upper over the last, and a hand lever additional thereto for powerfully depressing the wipers onto the bottom of the last.

68. In a bed lasting machine, the combination of a toe lasting head, toe wipers carried by said head to wipe the upper over the toe end of the last, means for bodily raising and lowering the head to position the wipers with respect to the bottom of the last that they may properly wipe the upper thereover, and additional means for depressing the wipers onto the bottom of the last after the wiping action.

69. In a bed lasting machine, the combination of a toe lasting head, toe wipers carried by said head to wipe the upper over the toe end of the last, means for tilting the head to bring the wipers substantially into the plane of the last bottom, means for bodily raising and lowering the head to position the wipers with respect to the bottom of the last that they may properly wipe the upper thereover, and additional means for depressing the wipers onto the bottom of the last after the wiping action.

70. In a bed lasting machine, the combination of a toe lasting head, toe wipers carried by said head to wipe the upper over the toe end of the last, a treadle, connections between the treadle and head for raising and lowering the head to position the wipers for the wiping action, and a hand lever for giving an additional depression to the head to lay the stock upon the insole and crease the upper over the edge of the insole.

71. In a bed lasting machine, the combination of a vertically movable wiper carrying member, means for raising the member, and other means for depressing said member, said other means being adapted for the application of greater force than the first named means.

72. In a bed lasting machine, the combination of wipers for acting at the end portions of a shoe to wipe the upper over the insole, wiper depressing means adapted to be actuated simultaneously with the closing-in movement of the wipers, and other wiper

depressing means of augmented force to cause the wipers to act upon the stock after the application of the fastenings.

73. In a bed lasting machine, the combination of wipers to act upon the end portion of a shoe and wipe the upper over the insole, foot lever elevating and depressing means for the wipers, and means other than the foot lever means for depressing the wipers with augmented force.

74. In a bed lasting machine, the combination, with a movable lasting head, of means for positioning it for the lasting operation, a last support thereon, last position-

ing and heel band claspings means adapted to be locked for the lasting operation, means automatically to release said positioning and claspings means as the head returns from lasting position, and means also to effect release of the claspings means independent of the position of the head.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS GUSTAVE PLANT

Witnesses

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LASTING MECHANISM.
APPLICATION FILED MAR. 19, 1910.

1,002,818.

Patented Sept. 12, 1911.

3 SHEETS—SHEET 1.

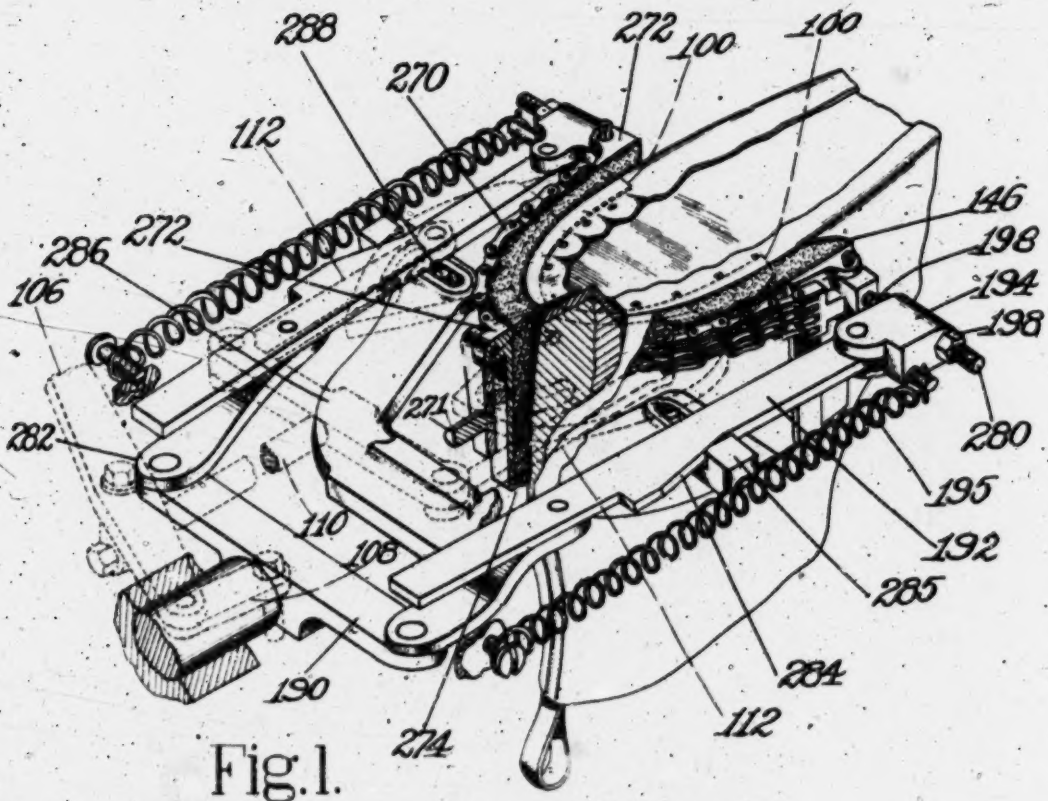


Fig. 1.

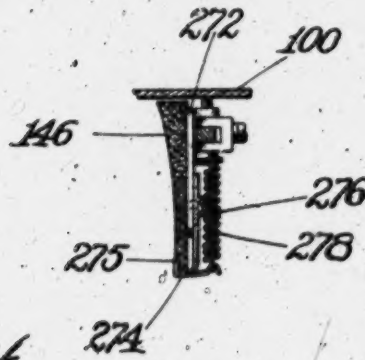


Fig. 2.

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1,002,818.

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2 SHEETS-SHEET 2.

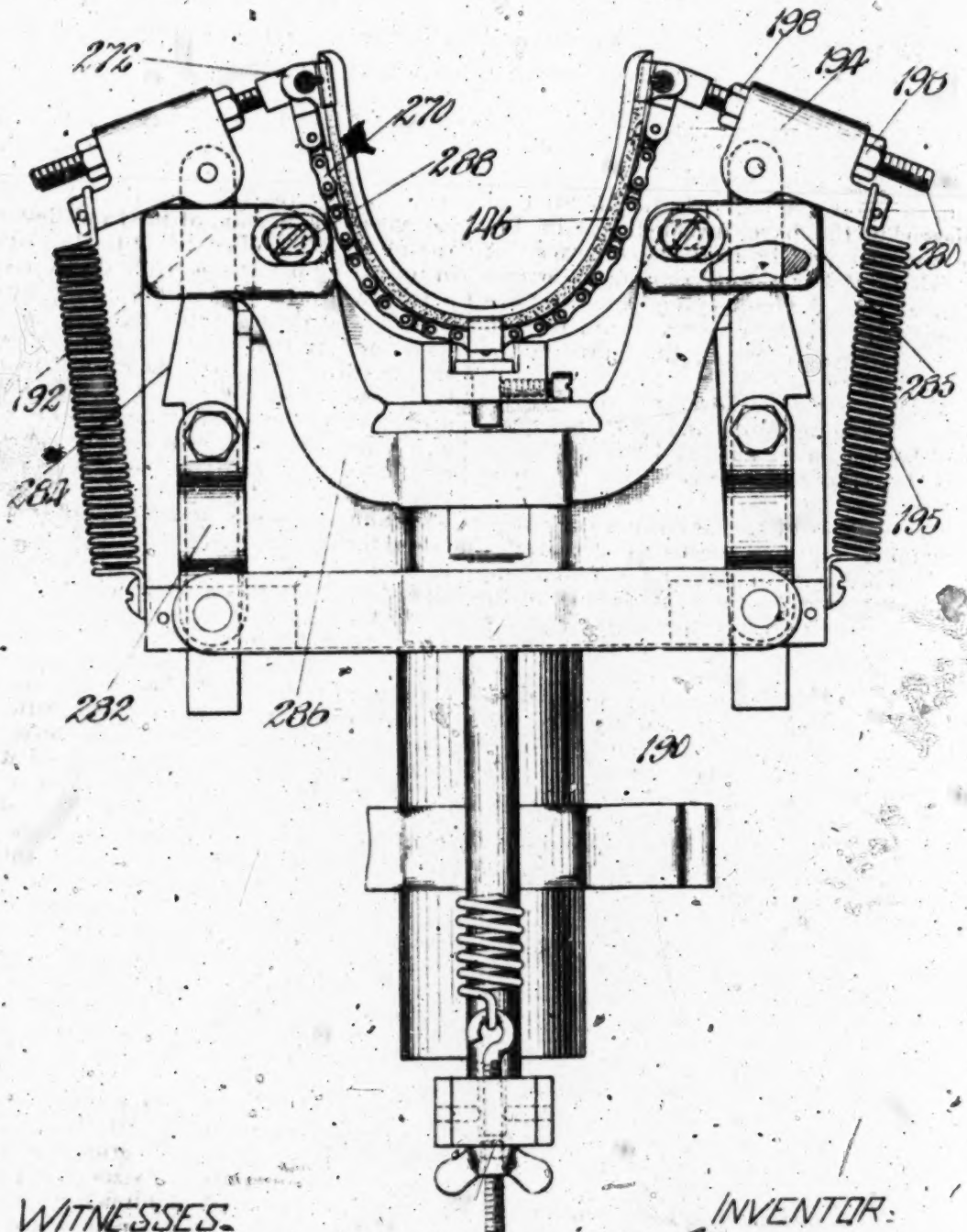


Fig. 3.

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LASTING MECHANISM.

1,002,818.

Specification of Letters Patent.

Patented Sept. 12, 1911.

Application filed March 19, 1910. Serial No. 550,434.

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Lasting Mechanisms, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for use in forming shoes and particularly to heel lasting mechanism, and has for its object to provide improved heel clamping means.

One feature of this invention consists in providing improved means for actuating a heel embracing band to cause it to clamp with equal pressure the opposite sides of the heel portions of shoes upon right and left lasts which are laterally unsymmetrical.

As is well known, many lasts in use at the present time are fuller at the outer side of the heel portion, which corresponds with the outer side of the foot, than they are at the inner side of the heel portion, particularly at that part of the last which merges into the shank of the last. Any adjustment of the heel-band-closing mechanism which is arranged to cause it to close farther on one side than on the other for one last is, of course, wrong for the other one of a pair of lasts. In accordance with the present invention, therefore, means is provided for equalizing the pressure of the band-closing mechanism at the two sides of the last. This means may advantageously be arranged to permit the band-closing mechanism to adjust the two end portions of the band relatively in accordance with the shape of the last before the final pressure for clamping the upper against the sides of the last is applied.

In the embodiment of the invention herein shown, the band is closed by endwise movable slide bars having inclines on their outer faces. These inclines cooperate with abutments which cause the slide bars to move inwardly and force the end portions of the band against the sides of the last as said bars advance.

In accordance with a preferred embodiment of this invention the abutments at the

two sides are connected for movement laterally together to position the slide bars automatically as the band closes against the fuller side of the last. In this positioning movement the portion of the band first contacting with the fuller side of the last pauses in its closing movement while the other end portion of the band is forced up into similar contact with the less full side of the last and thereafter the two end portions of the band are caused to clamp the shoe equally at the two sides of the heel. The two abutments are shown as formed upon the opposite ends of a transverse bar which is guided by pins and slots and has free movement transversely of the last.

A movable connection is employed between the ends of the band and the adjacent ends of the slide bars in order to permit the slide bars to continue their advance movement for closing the end portions of the band against the shoe after the advance movement of the band has been stopped by its engagement with the heel end of the last. A convenient form of movable connection for this purpose includes an angle lever fulcrumed on a slide bar and connected at one end to the band while its other end is connected by a spring to a fixed part of the machine. With this arrangement the end portion of the band is forced inwardly by the turning of the angle lever. The spring returns the parts to normal position when the slide bars are retracted.

A novel feature of this mechanism consists in the provision of an adjustable angle lever formed to permit the lateral position of the end portion of the band with relation to the slide bars to be varied for shoes of different sizes.

It has heretofore been necessary to equip a heel lasting mechanism with three pairs of angle levers of different lengths to adapt the machine for the groups of shoes comprised in men's, women's and children's shoes. By the present invention a single angle lever can be adjusted to support the band in proper position for all the different widths of shoes. The construction employed comprises an angle block, having the usual fulcrum point and the outer spring-engaged arm of the lever, and an arm which is adjustable lengthwise in said block for connection with the band. This adjustable arm

is herein shown as a screw threaded rod which is secured in adjusted position in the angle block by suitable lock nuts.

Further features of this invention are found in the means for supporting and actuating the heel band and particularly in means for sustaining the band adjustably or yieldingly in relation to the lower face of the heel wipers which bend the upper over the edge of the last and form it down upon the heel seat. By this feature of the invention provision is made for locating the band in close proximity to or in contact with the wipers so that the band and wipers cooperate to form the adjacent surfaces into a desirable angular edge. The band may be so sustained by means including either a yielding element or by relatively adjustable members. Preferably the lower member will include a hook to extend under the lower edge of the band and, it may be, upwardly along the inner side of the band a short distance. In the latter event the band may be recessed to receive the tip of the hook. This mounting permits the ready removal of the band without disconnecting any of the parts, and allows the heel band to follow the shoe in any upward movement of the last, such for example as the usual lifting movement to compress the overwiped upper between the last bottom and the lower face of the wipers.

It may be here noted that while this invention is shown as embodied in heel lasting mechanism including a heel band it may equally well be applied to a toe lasting mechanism in which the corresponding end embracing member is usually called a toe pad.

These and other features of the invention, including certain combinations of parts and more important details will be explained in connection with the following description and then be pointed out in the claims.

Figure 1 is a perspective view of so much of the heel lasting mechanism embodying this invention as is necessary for illustrating this invention; Fig. 2 is a vertical section of Fig. 1; Fig. 3 is a plan view of the portions of the machine shown in Fig. 1.

The heel lasting mechanism includes wipers suitably supported and guided to advance and close over the heel seat of the shoe when pressed forwardly by actuating devices which include the links 112, rod 110 and lever 106 which is fulcrumed at its end on the link 108. These parts are shown in dotted lines in Fig. 1 to permit a fuller view of the underlying heel band and its operating mechanism. The heel band 146 is supported and actuated by a chain 270. Certain links or plates 272, which form links of the chain or are connected with the chain and which are shown as located at the rear center and at the two ends, have depending arms which carry upturned band supporting fin-

gers 274. These fingers may have upturned tips as at 275 if desired to enable them to embrace the lower edge of the band, or these tips may be omitted and reliance placed upon the tendency of the band toward expansion to cause it to remain supported on the fingers 274, see Figs. 1 and 2. These fingers may be adjustably connected with the links 272 as by a screw and slot as at 276 to take up wear caused by the movement of the lasting wipers over the upper edge of the band. If desired the screw may remain loose and a spring 278 be employed which will maintain the band constantly raised snugly against the lower face of the heel seat wipers and insure a cooperation between said band and the wipers to form the shoe stock at the angular edge of the heel seat.

The front end plates 272 of the chain are connected to laterally extending arms or angle levers 194 which are fulcrumed upon endwise movable slide bars 192 supported by the bracket 286. These levers each have an adjustable connection with the chain 270 formed by a screw threaded rod 280 which is pivoted to the plate 272 at its inner end and secured in adjusted position in the lever by lock nuts 198. By this arrangement the ends of the heel band can if desired be separately adjusted for right and left lasts to clamp either last as firmly against the concave innerside of the last as against the relatively full outer side of the last, and also the band may be adjusted to open more or less widely for shoes of different groups of sizes as men's, women's and children's. The provision of this adjustable connection saves the necessity for providing angle levers of different lengths for these groups of sizes.

The closing of the band is effected by power transmitted from a plunger 188 and its rigidly attached crosshead 190 to the longitudinally movable slide bars 192 through the swinging links which are pivoted to the said slide bars and to the cross head. This forward movement of the slide bars advances the band as a whole until the band is stopped by firm contact with the heel end of the shoe. The continued advance of the bars then compels the levers 194 to turn against the pull of springs 195 which maintain a snug forward tension on the two ends of the band. During this forward movement of the slide bars 192 they are actuated inwardly to close the band against the sides of the shoe, by cooperating wedge faces 284 on the bars and non-separable lugs 285 with which the wedges have sliding engagement. In this embodiment of the invention these lugs are formed upon the horizontally arranged U-shaped bracket or plate 286 which is supported for right line movement transversely of the machine and is guided in such movement by pins 288 that rise from a

fixed portion of the machine head over which the plate 286 is movable and these pins stand in slots formed in the arms of the plate near the lugs 285. This arrangement of the lugs on the movable plate 286 permits lateral movement of the lugs together and a transverse shifting of the bars in company and effects an equalization of the inward pressure of the band at its two ends. This insures that the band shall clamp the upper against the hollow inner side of the last with the same force as it is clamped against the relatively full outer side of the last. This equalization of the pressure at the two sides, in the region of the ends of the heel stiffener, is of great importance in securing good lasting, especially on such crooked and irregular lasts as many of those now in use.

As advised, it is new by this invention to provide, for advancing and closing of the ends of the heel or toe band, a mechanism which includes cooperating devices one of which, as the slide bars 192, has cam faces to effect closing of the band ends and one of which, as the plate 286 and its abutments 285, is mounted for self adjustment transversely of the machine to equalize the band closing pressure at the two sides of the shoe. It is to be noted that the equalizer, which is the plate 286, is independent in this embodiment of the invention from the means which produces the advance movement of the band.

In the use of the invention a shoe is properly supported vertically and the last and the heel band are relatively actuated longitudinally and laterally, during which movement the heel is thrust against the middle portion of the band and the ends of the band are closed snugly against the sides of the shoe. This latter actuation is effected by the forward movement of the crosshead 190 which moves longitudinally toward the right in Fig. 1 the bars 192 which support the levers 194 which in turn support the front ends of the band. The cooperating wedge faces of the relatively advancing members 284 and 285, which are formed respectively on the slide bars 192 and the equalizer 286, swing or turn the slide bars 192 toward the center of the machine and move the band supporting levers 194 bodily inwardly toward the shoe to clamp the ends of the band against the sides of the shoe. If the shoe is less full on one side at the end of the band than on the other side the equalizer 286 moves freely from the less full side to the larger side and thus provides equal pressure on both sides. The rear end of the band is supported by the stem 271 in the head of the machine which constitutes the carrier upon which all the described parts are movable. Of course it is immaterial whether the inclined faces 284 are

formed on the bars 192 or on the studs of the part 286 for the effect is the same in either case when these parts are relatively moved longitudinally of the shoe.

If it is desired to adjust the band for shoes of different widths this is effected by manipulating the nuts 198, 198 and screw 280 on the levers 194 in an obvious way. If the band is to be removed the fingers 274 are sprung downwardly against the springs 278 or are moved after loosening the binding screws if the screws have been tightened, and the band can then be readily pulled out of its holders. When restored it is pressed close up against the under face of the wipers.

Having explained the nature of this invention and described a preferred embodiment thereof I claim as new and desire to secure by Letters Patent of the United States:—

1. A heel lasting mechanism having, in combination, a heel embracing band, means for tensioning the band forwardly, and means for closing the band, said closing means including a member which is mounted for right line movement transversely of the machine for equalizing the closing pressure at the two ends of the band.

2. A heel lasting mechanism having, in combination, a heel embracing band and actuating mechanism therefor, comprising endwise movable slide bars, having oppositely arranged wedge faces, abutments to be engaged by said faces to move the bars laterally as they are advanced, and a connection between the abutments arranged to permit them to move laterally together to equalize the band closing pressure applied by said bars.

3. In a lasting machine, the combination with a heel band, of slide bars, connected with the end portions of the band, inclines on said slide bars, abutments cooperating with the inclines to force the slide bars inwardly as they are advanced, and means permitting the abutments to move laterally together to equalize the lateral pressure of the slide bars and band against shoes of laterally unsymmetrical formation.

4. A heel lasting mechanism having, in combination, a heel band, means for closing the band by a movement of the closing means lengthwise of the shoe, and guiding devices for the closing means at the two sides of the shoe, said guiding devices being connected transversely of the shoe to move in company to equalize the closing pressure at the two sides of the shoe.

5. A heel lasting mechanism, having, in combination, a heel band and supporting means connected with the end portions of the band for closing the band, said means comprising an angle lever having an adjustable arm connected to the band.

6. A heel lasting mechanism, having, in combination, a heel band and supporting means connected with the end portions of the band for closing the band, said means comprising an actuator, an angle block on said actuator having an extensible arm connected to the heel band, and means for locking the said extensible arm in adjusted relation to the angle bar.

7. A heel lasting mechanism, having, in combination, a heel band, the endwise movable slide bar 192, the angle block 194 fulcrumed thereon, the spring 195 connected to said angle block, the endwise adjustable arm 280 mounted in said angle block and connected to the heel band, and locking nuts 198 for securing said arm in adjusted position.

8. A heel lasting mechanism, having, in combination, a heel embracing band, a relatively narrow chain to actuate the band, and band supports depending from the narrow chain along the outer sides of the band and having intumed supporting fingers extending under the band.

9. A heel lasting mechanism, having, in combination, a heel embracing band, a relatively narrow chain to actuate the band, and band supports comprising vertically movable hooks engaging under the lower edge of the band.

10. A heel lasting mechanism, having, in combination, a heel embracing band, a wiper and means for holding the upper edge of the band yieldingly toward the wiper.

11. A heel lasting mechanism, having, in combination, a heel embracing band, a wiper, and band supporting means having provision for adjustment of the band toward the plane of the wiper as and for the purpose described.

12. In a lasting machine, the combination with a lasting band of levers supporting its ends, longitudinally movable supports for the levers and means 282 fulcrumed for lateral movement carrying said supports, and means 285, 285 connected together and movable transversely of the machine for moving said supports relatively to their carrying means.

13. The combination with a heel band, of band actuating bars 192, laterally movable means 280 sustaining said bars, lateral abutments 285 on said sustaining means, and the wedge faces 284 cooperating with said abutments to force the ends of the band inwardly when the parts are relatively actuated lengthwise of the shoe.

14. An end lasting mechanism having, in combination, an end embracing band and operating mechanism therefor comprising levers each of which is connected at one end to a band end and is secured yieldingly at its other end, swinging slide bars upon which the levers are fulcrumed, a plunger and

cross-head to advance said slide bars, a transversely movable equalizer to effect swinging of said slide bars and to be moved by them, and cooperating cam surfaces between said slide bars and said equalizer whereby upon movement of said cross-head said equalizer may swing said slide bars and then itself be moved transversely of the machine.

15. An end lasting mechanism having, in combination, an end embracing band and operating mechanism therefor comprising swinging slide bars connected with the ends of the band, a plunger and cross-head to advance said slide bars, a transversely movable equalizer to effect swinging of the slide bars and to be moved by them, and cooperating cam surfaces between said slide bars and said equalizer to effect swinging of the slide bars and then transverse movement of the equalizer when the cross-head and plunger are advanced.

16. An end lasting mechanism having, in combination, an end embracing band and band end advancing and closing mechanism including cooperating devices one of which is provided with cam faces to effect closing of the band ends and one of which is mounted for self adjustment transversely of the machine to equalize band closing pressure at the two sides of an unsymmetrical last.

17. An end lasting mechanism having, in combination, an end embracing band and band advancing and end closing means including an equalizer which is independent of the means which produces advance movement of the band and which is arranged to insure like closing pressure at the opposite sides of an unsymmetrical last.

18. An end lasting mechanism having, in combination, an end embracing band, means to advance the band ends and to move them inwardly as an incident to the advancing movement, and inward movement controlling means for the two band ends which is automatically movable transversely of the machine to equalize the band closing pressure.

19. An end lasting mechanism having, in combination, an end embracing band, end supporting levers, slide bars to which the levers are pivoted, a cross-head connecting the slide bars, a plunger rigidly fastened to the cross-head to advance the slide bars equally and together, and an equalizer movable transversely of the machine to cause the slide bars to turn to one side or the other for permitting the band to conform to the swing of the last.

20. An end lasting mechanism having, in combination, an end embracing band, slide bars for moving the band ends forwardly and inwardly, and guiding means for the slide bars mounted for movement during the band closing operation to effect different

band closing movement by the bar on one side of the shoe from that effected by the bar on the other side of the shoe for the purpose described.

21. An end lasting mechanism having, in combination, an end embracing band, means for advancing and closing the ends of the band including a transversely movable equalizer for the closing pressure and multiple pin and slot guiding connections for maintaining constant angular position of the equalizer in its movements.

22. An end lasting mechanism having, in combination, an end embracing band having pivoted end supports, slide bars carrying said end supports, and means both to advance and to swing said slide bars to cause the band to embrace the shoe, said means including a member which is automatically movable transversely of the shoe to equalize the band closing pressure at the two sides of the shoe.

23. An end lasting mechanism having, in combination, an end embracing band having pivoted end supports, supporting means for said end supports mounted for movement toward and from said band, and means mounted for self adjustment transversely of the machine to move said supporting means for effecting equal pressure at the two sides of an unsymmetrical last.

24. An end lasting mechanism having, in combination, an end embracing band having end support and actuating devices for said two supports including equalizing means movable transversely of the machine by wedge action to allow the relative extents of movement of the two end supports to be determined by the shape of the shoe.

25. An end lasting mechanism having, in combination, an end embracing band, pivoted end supports, means to advance said supports, and means also to move said supports with their pivots toward the band, said last mentioned means having provision for permitting movement of opposite end supports together in the same direction transversely of the machine for positioning the band to apply equal pressure at opposite sides of an unsymmetrical shoe.

26. An end lasting mechanism having, in combination, an end embracing band and actuating mechanism to tension forwardly and to close the band ends including a plunger, a cross-head held against angular movement relatively to the plunger, slide bars receiving forward movement from the opposite ends of the cross-head and transmitting such movement to the band ends, and means arranged to close said bars toward the last and to equalize closing pressure against opposite sides of unsymmetrically formed lasts.

27. An end lasting mechanism having, in combination, an end embracing band and actuating mechanism to tension forwardly

and to close the band ends, including a plunger, slide bars, connections permitting lateral movement of the rear ends of the slide bars relatively to the plunger, and means for effecting such lateral movement of the slide bars which is constructed and arranged for self adjustment to equalize band closing pressure at the two sides of the shoe.

28. An end lasting mechanism having, in combination, an end embracing band, endwise and inwardly movable slide bars cooperating with opposite ends of the band, operating means arranged to advance both bars the same distance and a transversely movable equalizer for closing the band with equal pressure against opposite sides of an unsymmetrical last.

29. An end lasting mechanism having, in combination, an end embracing band, bars mounted to slide longitudinally of the machine and cooperating with opposite ends of the band, means to advance said bars equally at the two sides of the machine, and means adapted to effect inward closing of the band ends during said advance and having provision for equalizing the band closing pressure at the two sides of an unsymmetrical last.

30. An end lasting mechanism having, in combination, an end embracing band, means for advancing the band ends longitudinally of the shoe, and additional means movable transversely of the shoe and having its position controlled automatically by the work to effect equal band end closing pressure against the two sides of an unsymmetrical shoe.

31. An end lasting mechanism having, in combination, an end embracing band, and operating means having provision for closing the end portions of the band inwardly against the sides of the shoe after the band has been drawn against the end of the shoe, and an equalizer having a bodily movement transversely of the machine to distribute band end closing pressure equally at opposite sides of an unsymmetrical shoe.

32. A lasting mechanism having, in combination, an end embracing band, slide bars for moving the band ends forwardly and inwardly, a cross-head for moving the slide bars, and a plunger upon which the cross-head is secured against pivotal movement, said machine including an element which is automatically movable transversely of the machine to equalize band end closing pressure upon unsymmetrical lasts.

33. An end lasting mechanism, having in combination, an end embracing band and operating means therefor comprising levers each connected at one end to a band end and having its other end yieldingly secured, slide bars upon which the levers are fulcrumed, a plunger and connections to advance the slide bars, inclines formed on the

slide bars to wedge them inwardly as they are advanced and a transversely movable equalizing yoke carrying abutments for the opposed inclines for the purpose described.

34. In a lasting machine the combination with a heel embracing band, of supporting and operating slide bars, bell crank levers mounted thereon and carrying the band substantially as described, inclines on said slide bars, and guiding devices against which said inclines engage and which are connected and movable together transversely of the machine for the purpose stated.

35. An end lasting mechanism comprising an end embracing band that is adapted to be

clasped about the end portion of a last, wipers that are adapted to be moved over the last bottom and supports for sustaining the band which are arranged relatively thereto to permit the band to follow the shoe in an upward movement for compressing the overwiped upper between the wipers and the last bottom.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MATTHIAS BROCK

Witnesses:

ARTHUR L. RUSSELL,

HERBERT W. KENWAY.

Correction in Letters Patent No. 1,002,818

It is hereby certified that in Letters Patent No. 1,002,818, granted September 12, 1911, upon the application of Matthias Brock, of Boston, Massachusetts, for an improvement in "Lasting Mechanisms," an error appears in the printed specification requiring correction as follows: In the heading, the words "Application filed March 19, 1910," should read *Original application filed October 16, 1909, Serial No. 522,987. Divided and this application filed March 19, 1910;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of October, A. D., 1911.

[SEAL.]

E. B. MOORE,

Commissioner of Patents

E. L. KEYES.

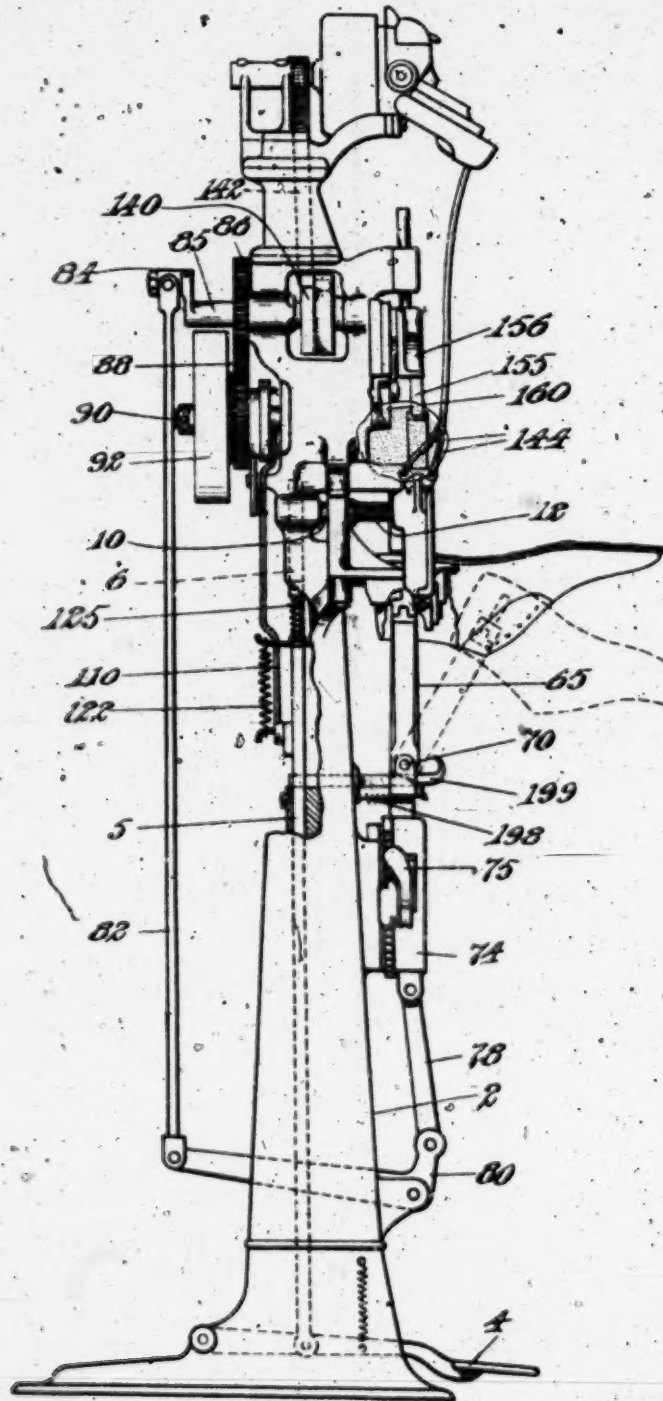
MACHINE FOR USE IN THE MANUFACTURE OF SHOES,

APPLICATION FILED APR. 30, 1908.

1,023,854.

Patented Apr. 23, 1912.

5 SHEETS—SHEET 1.



WITNESSES.

Edith C. Hollbrook
 Elizabeth C. Cople.

Fig. 1.

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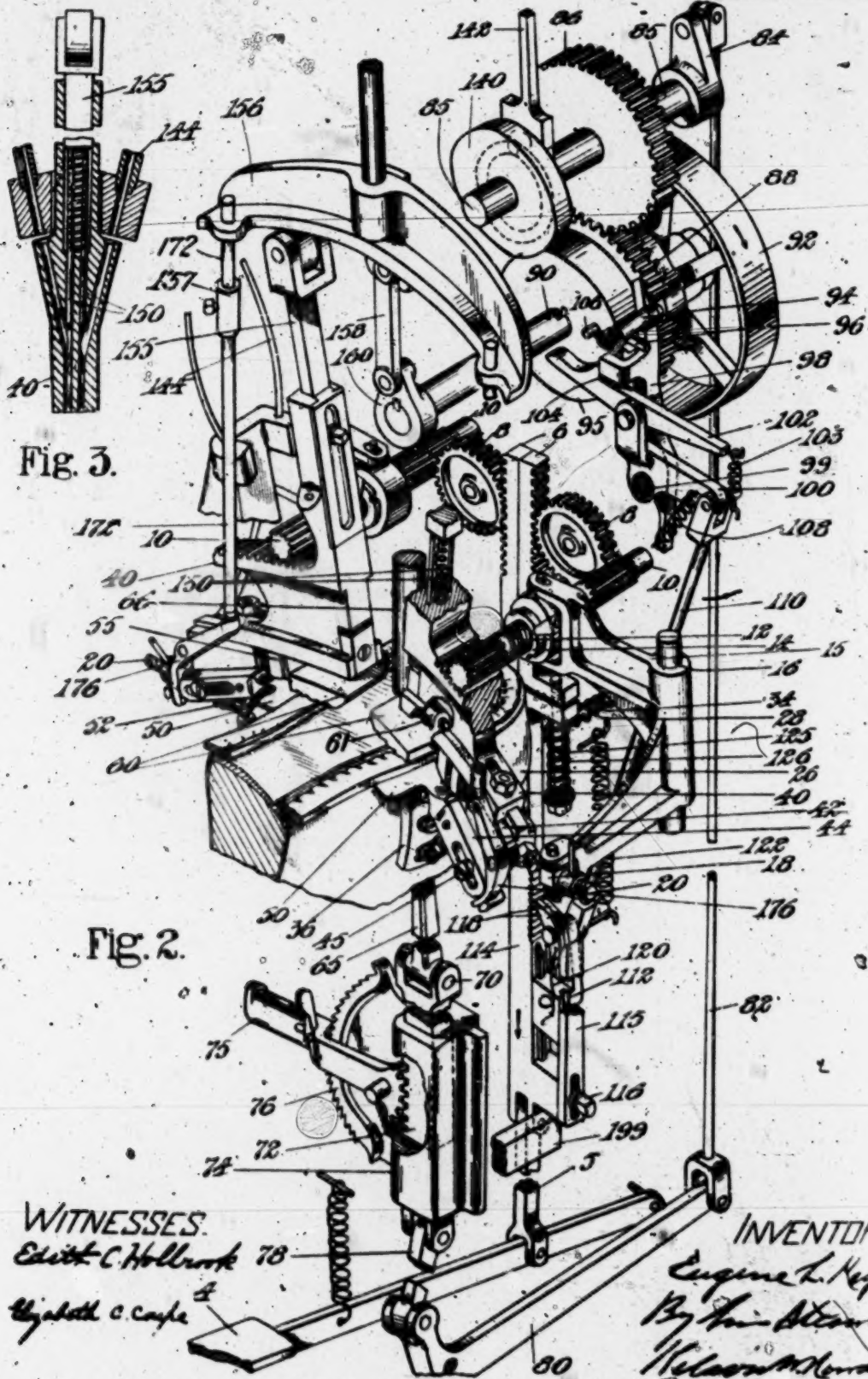
Ernest L. Keyes
 By his Attorney,
 Nelson & Howard

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MACHINE FOR USE IN THE MANUFACTURE OF SHOES.
APPLICATION FILED APR. 30, 1908.

1,023,854.

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5 SHEETS—SHEET 2.



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1,023,854.

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5 SHEETS-SHEET 3.

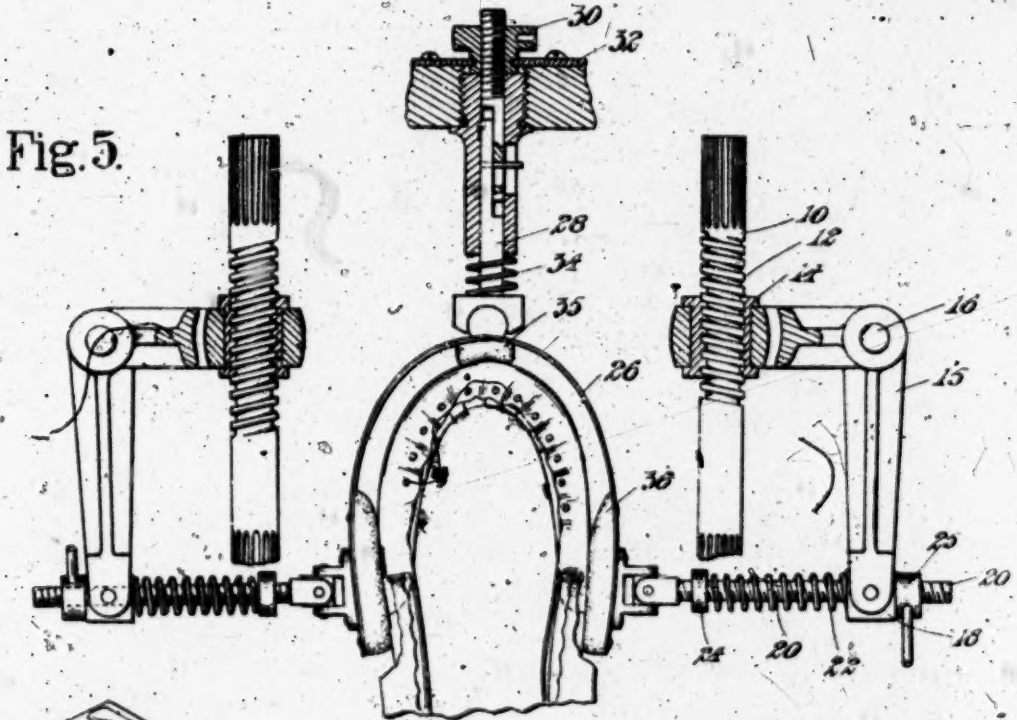


Fig. 4.

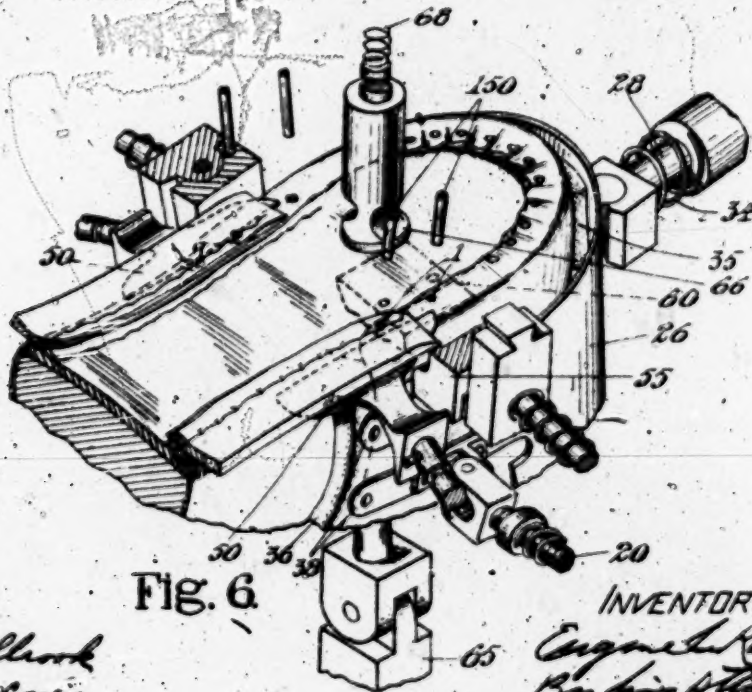


Fig. 6.

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MACHINE FOR USE IN THE MANUFACTURE OF SHOES.

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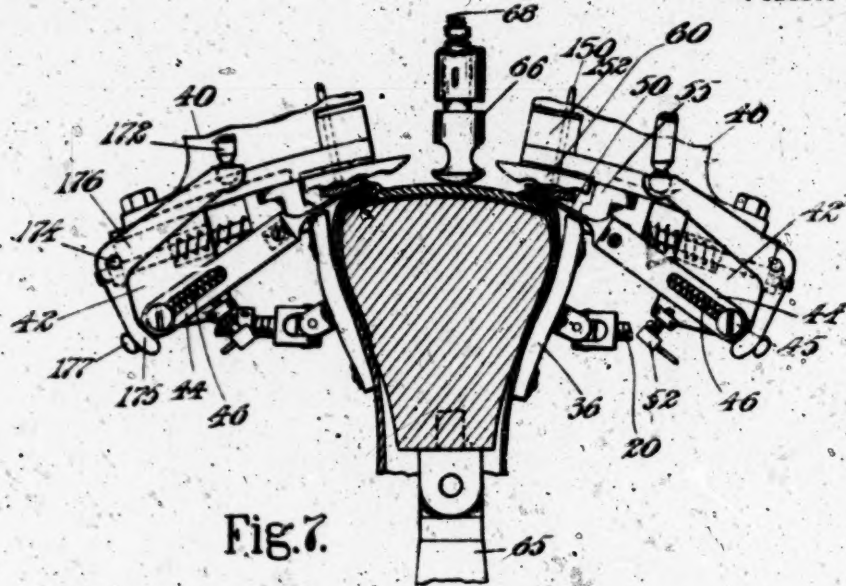


Fig. 7.

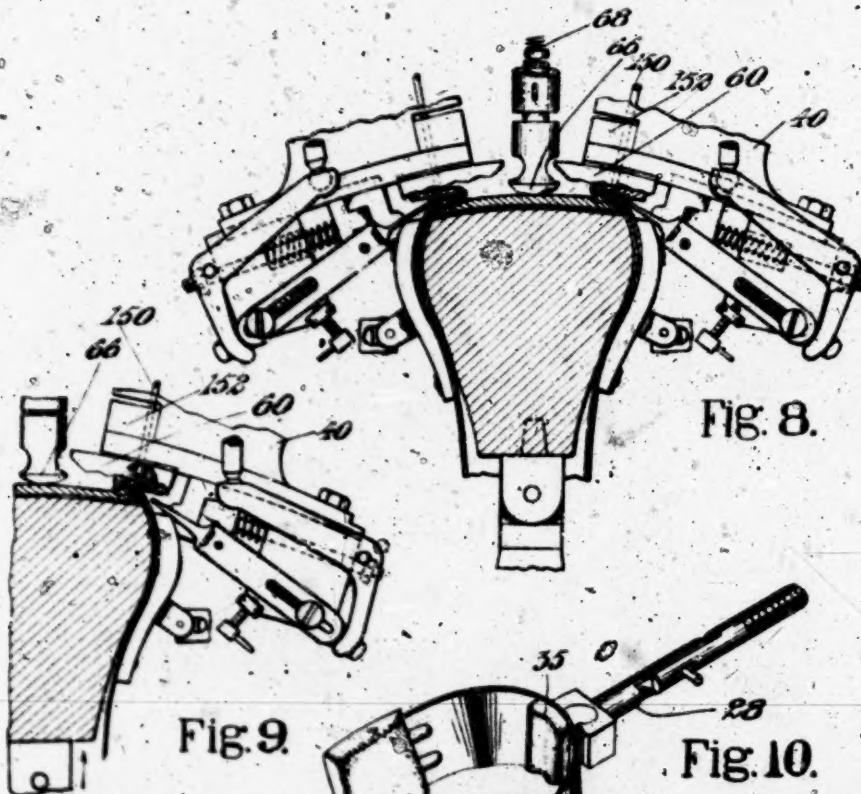


Fig. 8.

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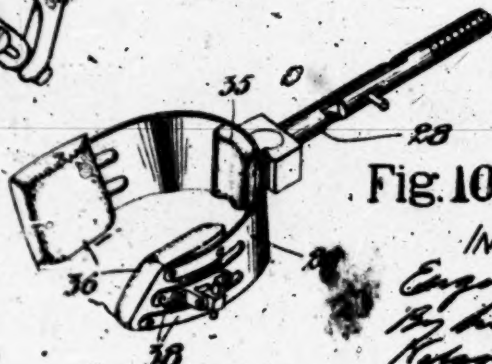


Fig. 10.

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MACHINE FOR USE IN THE MANUFACTURE OF SHOES.
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1,023,854.

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5 SHEETS-SHEET 5.

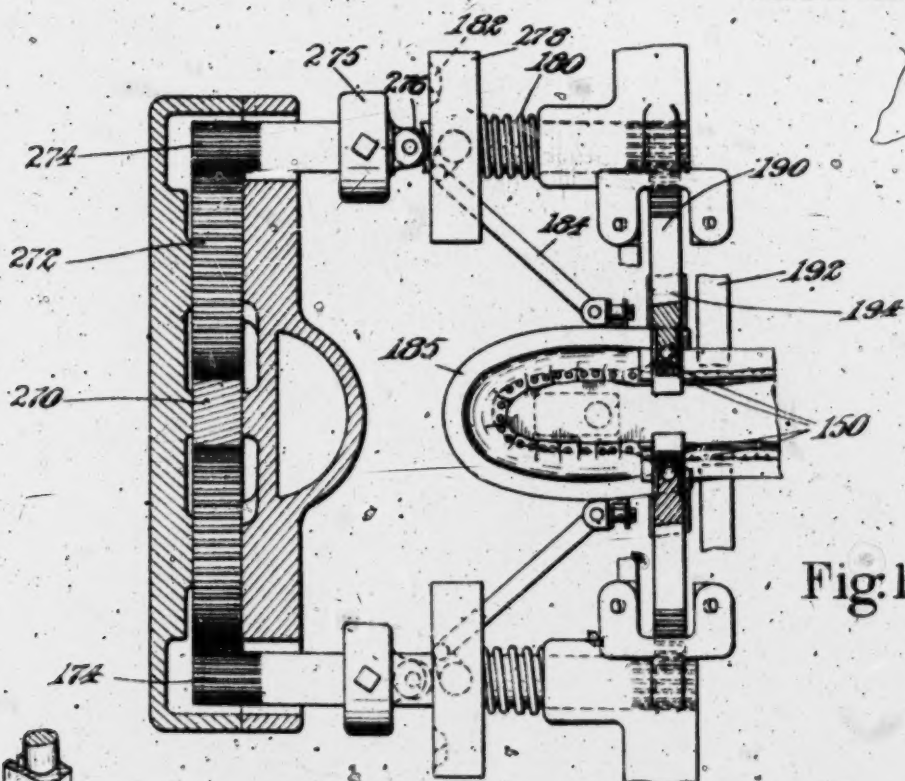


Fig. 11.

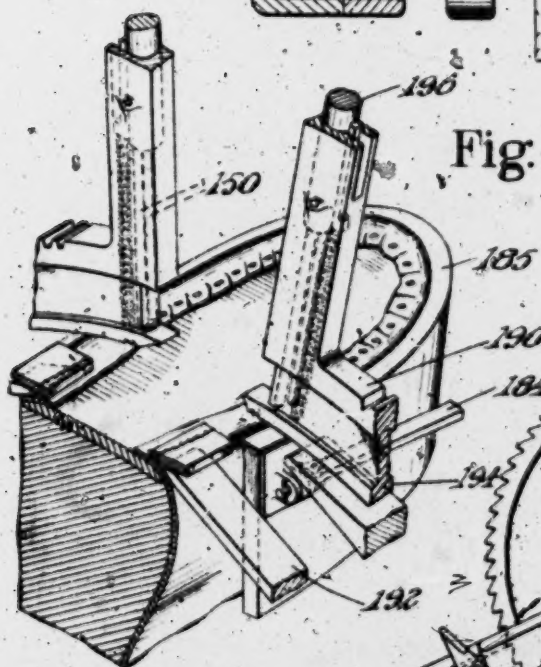


Fig. 12.

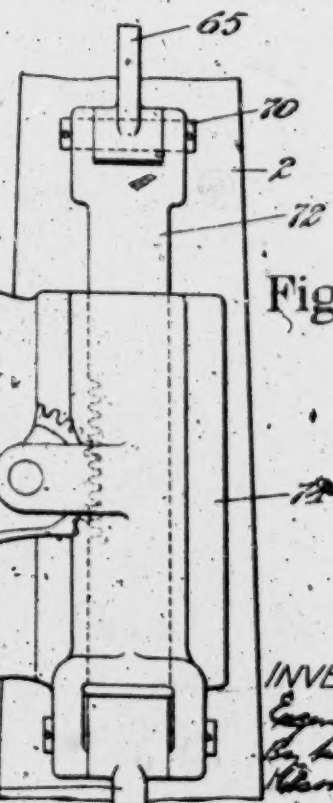


Fig. 13.

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[Signature]

UNITED STATES PATENT OFFICE.

EUGENE L. KEYES, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR USE IN THE MANUFACTURE OF SHOES.

1,023,854.

Specification of Letters Patent. Patented Apr. 23, 1912.

Application filed April 30, 1908. Serial No. 430,137.

To all whom it may concern:

Be it known that I, EUGENE L. KEYES, a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain improvements in Machines for Use in the Manufacture of Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for use in the manufacture of boots and shoes and the several features of the invention are herein illustrated, for the purpose of explanation, as embodied in a machine especially adapted for use upon a shoe having an out-turned flange. The Goodyear, or "welt," shoe is the most familiar example of this type of shoe and the use of the invention is herein explained in connection with the manufacture of welt shoes.

The general object of the invention is to provide mechanism by which the fitting of the upper materials to the last may be expeditiously effected and particularly to provide a mechanism by which the upper in the portions of the shoe on the sides and bottom of the last at and near the ends of the heel stiffener may be conformed to the last. In making welt shoes the upper, after having been stretched over the last in the lasting operation, is secured to the innersole at the heel seat end of the shoe by fully inserted tacks. At the sides and toe of the shoe the upper is secured by temporary fastenings which are later withdrawn and the upper is permanently fastened by stitches to the usual upstanding lip of the innersole. These stitches also pass through the inner edge of a strip of welting called the "welt" which forms an outturned sole attaching flange of shoe stock at the edge of the shoe. These stitches form the "inseam" of the shoe as distinguished from the outer seam by which the outer sole is later sewed to the welt. In forming the inseam the shoe is positioned by a channel guide that engages the base of the lip on the innersole in advance of the stitch-forming devices. The presence of this guide in advance of the stitch-forming devices prevents the inseam being carried up to the heel seat tacks on the side of the shoe where the inseam is completed and it is also

impractical to begin the inseam close to the tacks on the other side. There is usually, therefore, a space at each side of the shoe in which the upper is not secured to the innersole either by the heel seat tacks or by the inseam. This unsecured portion of the upper is located adjacent to the end portions of the heel stiffener which very often spring away from the last and pull the upper outwardly at the unsecured places. It is the practice in the manufacture of many shoes to extend the inseam to include the front end of that portion of the heel stiffener that overlies the last bottom. When this is done, if the stiffener has sprung away from the last, the end portion of the inseam is liable to be further out toward the edge of the last than it should be. In addition to such looseness as that described, which is frequently observable in a shoe after the welting operation, a further looseness is liable to be developed in the heel attaching operation. In this operation the heel portion of the shoe is subject to heavy pressure and if the upper has not been drawn tight and firmly secured prior to this operation it is liable to be bulged outwardly and this detracts from the appearance and the fit of the shoe. These portions of the shoe stock which are located adjacent to the end portions of the heel stiffener, and which seldom, if ever, fit as snugly to the contour of the last as they should do, are forced into position and secured by the illustrated machine embodying this invention. Numerous novel features of the invention are found in the construction and arrangement of the apparatus to adapt it for this purpose. In an earlier application Serial No. 399,520, is shown an apparatus for the same general purpose that is arranged to act upon one side of the shoe at a time.

An important feature of the present invention consists in providing means for operating simultaneously on the two sides of the shoe. The preferred construction is arranged to operate upon a wide range of sizes and shapes of shoes without special adjustments and to this end it comprises upper tightening means movable one toward the other, through distances which may vary according to the size and shape of the last, to force the upper into desired relation.

An important characteristic of the upper tightening mechanism preferably employed

is found in an upper engaging member constructed and arranged to engage the side of the shoe progressively from near the quarter and vamp seam upwardly toward the edge of an inverted shoe. This member works any slack stock there may be upwardly while forcing the upper and heel stiffener against and into conformity with the side faces of the last. Said engaging member is preferably employed with other devices that engage the upper and preferably the welt to tighten the upper over the edge of the last and hold it in position to be secured. The use of the engaging member to work the slack toward the edge of the last and clamp the upper and heel stiffener to the wool renders unnecessary any severe straining of the insteam by the devices that engage the welt or in-seam and avoids liability of injuring the upper or weakening the in-seam.

A further feature of the invention is found in the devices which engage the shoe stock at and adjacent to the in-seam to tighten the upper over the edge of the last. These devices, as herein shown, comprise a blade arranged to wipe over the edge of the shoe and enter the crease between the upper and welt where it finds a bearing against the insteam for pressing the shoe stock firmly inwardly over the last bottom. Oppositely arranged blades are located to engage opposed sides of the shoe and they are mounted so that they can yield relatively to adapt themselves to the position of the engaged surfaces and preferably they are supported for a slight turning movement that will enable them to adapt themselves to the slight variations that may be expected in the contour of the engaged surfaces. Manually controlled means is provided by which the presser blades may be advanced repeatedly to work the shoe stock into desired position.

In accordance with a further feature of the invention means is provided which is adapted to engage the upper side of the welt and the in-seam and in wiping over the shoe bottom to force the shoe stock inwardly. When employed with the presser blade the wiper holds the welt from upward displacement by the blade which preferably is inclined upwardly to facilitate tightening the upper over the edge of the last.

Another object of this invention is to prepare the surface of the shoe bottom for the reception of the outersole. The welt attaching operation leaves the channel lip, the upper, the edge of the welt and the edge of the heel stiffener upstanding more or less and presenting projections that offer an unsatisfactory seat for the outer sole, especially at that portion that will be covered by the fore part or breast of the heel.

An important feature of this invention consists in shaping the shoe bottom for the

reception of the outersole and particularly the shoe stock of that portion of the in-seams at and adjacent to the location of the breast line of the shoe. As herein shown the shaping of the shoe bottom is effected by compression, which compacts the several portions of up-standing stock against the innersole and levels the surface to form a firm and even seat for the heel seat end of the sole.

The invention is not, of course, limited to shaping the shoe bottom by compression as the result could of course be accomplished in a more or less satisfactory degree in other ways. Preferably, however, the shaping of the shoe bottom, especially if this is done by compression, will be effected after the upper has been tightened over the edge of the last and while it is held in such condition so that it will be molded into its final position on the shoe bottom. The compression of the stock of the bottom of the shoe is herein shown as effected by raising the shoe support to force the shoe upwardly against the wipers referred to which are moved inwardly over the bottom of the shoe in forcing the upper into tightened relation to the last. To this end the work engaging surfaces of these wipers is extensive enough to cover the portions of the shoe bottom that it is desirable to compress. Preferably the presser blades are withdrawn from the bottom of the welt crease as the pressure is applied so that they offer no obstruction to the compression of the stock.

A further feature of the invention consists in the provision of fastening inserting mechanism constructed and arranged with relation to the other operating devices of the machine to secure the shoe stock while it is held in the position to which it has been forced. This mechanism preferably includes means arranged at each side of the machine and having a movement into an operative position determined by the movement of the stock engaging devices. Provision is made for driving one tack into the butt end portion of the welt and another tack into the upper in the space between the end of the in-seam and the row of heel seat tacks.

Another feature of the invention consists in the mechanism employed to actuate the several devices. This mechanism includes manually controlled means by which the several devices for tightening the upper may, without adjustment, be caused to operate in the desired order upon shoes of different sizes and may, if desired, be actuated a plurality of times. When the shoe stock has been satisfactorily manipulated a further movement of the manually controlled means sets into operation power driven mechanism by which the stock is compressed for leveling the shoe bottom and the securing tacks are

driven for fastening the stock while it is held in position and while it is under compression.

These and other features of the invention, including numerous details of construction and combinations of parts, will be more fully explained in the following description and then pointed out in the claims.

In the drawings which represent one embodiment of the invention.—Figure 1 is a side elevation of the machine. Fig. 2 is a perspective view with parts broken away and showing many of the operating parts of the machine. Figs. 3 and 4 are details of the tacking mechanism. Fig. 5 is a plan view of portions of the machine in the plane of the shoe bottom. Fig. 6 is a perspective view showing further details. Figs. 7, 8 and 9 are end elevations of some of the operating devices in different stages of their operation on a shoe which is shown in section. Fig. 10 is a perspective view of the heel embracing clamp. Figs. 11 and 12 are respectively plan and perspective views of a slightly modified construction and arrangement of parts shown in Figs. 5 and 6. Fig. 13 is a side elevation of the heel spindle adjusting means that is shown in perspective in Fig. 2.

The column 2 of the machine has support for a treadle 4 connected by means of a rod 5 and intermediate devices with rack bars 6. Each of these rack bars actuates a series of devices at one side of the shoe. These devices at the two sides of the shoe are alike and it is, therefore, necessary to describe only one. The bars engage pinions 8 arranged to turn shafts 10 positioned at opposite sides of the machine and each is provided with a screw-threaded portion 12 which receives a sleeve 14 loosely mounted on the inwardly projecting arm of a bell crank 15. The bell crank is arranged to turn about an axis 16 fixed in the head of the column and its forward end is pivotally connected, as shown in Fig. 5, to a sleeve 18 adapted to slide on a rod 20. The bell crank acts through a spring 22 that surrounds the rod and abuts against a collar 24. A stop 25 is threaded on the outer end of the rod 20. By this arrangement the outward movement of the rod is unyieldingly effected and the inward movement is yieldingly effected. The rod is connected at its inner end to a heel embracing band 26 arranged to extend around the heel portion of the shoe and supported at its rear end by a rod 28 that is guided in the frame of the machine. This rod is made in two overlapping sections, as shown in Fig. 5, and extends through a threaded nut 30 mounted between holding plates 32 in the frame so that the rod or its rear section may be adjusted lengthwise. A spring 34 surrounds the front section of the rod between the

frame and the heel band and normally holds the band in an advanced position, but permits it to be pressed backwardly. The band is provided at 35 with a shoe engaging pad which with the band constitutes the back stop for the shoe which is to be operated upon in the machine. The band is provided near its front ends with extended pads 36 for engaging the sides of the shoe at and adjacent to the front ends of the heel stiffener. The band is preferably formed, as shown in Fig. 10, with its side portions so bent or twisted that the pads 36 engage the shoe first at their lower edges. As the pads are then forced inwardly by their operating devices the line of contact progresses upwardly and the area of engagement spreads toward and preferably substantially to the edge of the shoe, thus gathering up any slackness in the stock on the side of the heel and working it to the edge of the shoe. The front end portions of the band may be formed as shown in Fig. 9 by separate fingers 38 to render these portions of the band more flexible.

The shaft 10 has at its forward end toothed engagement with rack teeth on the sliding carrier 40 which is movable transversely of the machine in suitable guideways formed in the head of the column. The carrier 40 has tongue and groove connection with a block 42 that is arranged for adjustment inwardly and outwardly, and pivotally supports a presser 44 which is slotted, as shown in Fig. 7, to embrace a stud 45 which acts through the spring 46 for yieldingly actuating the presser. This presser is provided at its inner end with a blade 50 which may be formed, as shown best in Fig. 6 to engage the shoe stock at and adjacent to the edge of the last and to enter the crease between the upper and the outwardly projecting sole-attaching flange or welt of the shoe. The presser 44 is arranged for pivotal movement about the stud 45 and is supported from below by an adjustable stop 52, while the blade 50 rests upon and is guided by the upper edge of the pad 36 into position to engage the shoe under the welt. The block 42 also preferably supports yielding devices 53 arranged to engage the upper edge portion of the pads 36 for insuring the clamping engagement of the edge portion of the pad with the upper close to the edge of the last, as shown in Fig. 8. The carrier 40 also supports on its lower inner edge a wiper or presser 60 beveled at its front end and preferably corrugated on its lower face and adapted to move inwardly over the welt and the in-seam to assist the presser blades 50 in tightening the shoe stock over the edge of the last.

A spindle or rest 65 supports the shoe against an abutment or rest 66 depending

from the machine in position to engage the heel portion of the shoe bottom. This abutment may be arranged to yield upwardly against the tension of a moderately stiff spring 68. The spindle is shown as pivoted at 70 to a rack bar 72 and adapted to swing outwardly into the dotted line position shown in Fig. 4 to facilitate the application and removal of the shoe. The rack bar 72 extends through a member 74 guided in the side of the column 2 and is engaged by a toothed lever 75 pivoted to the member 74 by which the spindle and the shoe may be manually uplifted to present the shoe in position to be operated upon after it has been swung from the dotted line position into the full line position shown in Fig. 1. The lever 75 has a pawl for engaging a ratchet 76 to hold the lever in adjusted position. The member 74 has connection through the link 78 with the upwardly projecting arm of a bell crank lever 80, said arm and link forming a toggle. The bell crank 80 is pivoted to a bracket extending from the column of the machine and at its rear end is connected by a rod 82 with a crank 84 on a shaft 85, which is mounted in suitable bearings in the head of the column and is driven through gears 86 and 88 from the driving shaft 90, on which runs loosely a pulley 92. A clutch bolt 94 extends from a collar 95 fast on the driving shaft through the gear 88 and into the hub of the otherwise loose pulley 92. The clutch bolt has a pin 96 extending through a slot in the collar 95 into position to be engaged by the inclined face of a clutch controlling device 98. This controlling device is pivotally mounted on a stud 99, which also supports a lever 100 that carries a tilting bar 102, having on its inner end a shoulder 104 adapted to be held by the spring 103 in engagement with the device 98 and withdraw that device from the stud 96 when the lever 100 is rocked. The collar 95 has a stud 106 arranged to engage the inner end of the tilting bar 102 after the machine is started and swing the shoulder 104 downwardly away from the controlling device 98 to permit the spring 103 to return said device into position to engage the stud 96 when the driving shaft has completed one revolution. Any other usual form of one revolution clutch mechanism may be substituted for that described.

The lever 100 above referred to as the actuator for the clutch controlling device is connected by a rod 110 to a block 112 arranged for sliding movement in a frame 114, which constitutes one member of the connection between the treadle rod 5 and the rack bars 6 earlier referred to. This frame 114 has the slide bar 115 arranged for endwise adjustment by a screw and slot at 116 and formed at its upper end for en-

agement with the tails of pawls 118 carried by the block 112. This plate 115 holds the pawls out of engagement with a series of ratchet teeth formed on the frame 114 until the frame has been moved downwardly with relation to the block 112 and to said pawls far enough to release the latter. A spring 120 thereupon throws the pawls into engagement with the ratchet teeth and the frame and the pawls then form a connection between the treadle rod and the clutch rod 110 by which the latter and the clutch are actuated from the treadle. A spring 122 is arranged to sustain the weight of the block 112 and raise it after it has been depressed by the engagement of the pawls with the frame 114. The upper end of the frame 114 is formed with laterally projecting arms yieldingly connected with the rack bars 6 by the rods 125 and springs 126, one only of which is shown in Fig. 2.

The actuation of the driving shaft when the clutch is operated turns the shaft 85 and the crank 84 thereon to communicate motion to the last supporting spindle for raising the shoe against the pressers 60, whereby the shoe stock engaged by said pressers is compressed and leveled down upon the shoe bottom to form a seat for the outsole. The spring 68 permits the abutment or bottom rest 66 to yield during the compressing operation so that the entire compressing force is received by the pressers 60. The shaft 85 carries also a cam 140 for actuating a rod 142 that extends to a tack separating and delivering mechanism supported on the head of the column. This mechanism forms no part of the present invention and may be of any suitable construction adapted to supply a plurality of tacks to the conductors 144 at each operation of the machine. The tack supplying mechanism is timed to deliver the tacks from the conductors when the carrier 40 occupies its retracted position away from the shoe, in which position it stands in the relation to the conductors that is illustrated in Fig. 3. Said carriers 40 are provided, as shown in that figure with two tack passageways leading into the passages through which drivers 150 are movable. These driver passages terminate in tack holders mounted in a block 152 detachably secured to the carrier and shown separately in Fig. 4. The drivers 150 are carried by a bar 155 which is guided in the carrier 40 and provided on its upper end with a roll for making contact with the driving head 156. This driving head is connected by a link 158 with a crank 160 on the shaft 90. This crank is set to actuate the drivers for inserting tacks into shoe stock while the stock is under compression between the last bottom and the pressers 60. The pressers 60 are recessed to permit tacks to be driven through them, as shown in Fig. 130

1,023,854

6, and will preferably be connected to the carriers 40 as indicated at 61 in Fig. 2 to permit them to rock laterally for adjusting themselves to the surface of the work. This is particularly advantageous when, as shown herein, the wipers engage the beveled butt ends of the welt.

The blade carriers 44 are each connected with a bell crank 176, see Fig. 7, that is pivotally connected at 174 with the block 40 and has a lower arm 175 that engages an extension 177 on the carrier 44. The upper arm of the bell crank is connected to a rod 172 which extends upwardly and is guided in the nailing head 156. A collar 157 is adjustable on the rod and is positioned to be engaged by the nailing head for retracting the presser blades 50 from the welt crease as the shoe is raised to compress the stock against the wipers. The parts are relatively timed so that the blades hold the shoe stock in its tightened condition until sufficient pressure has been applied so that while it is held by the wipers the blades are withdrawn in season to prevent them from constituting an obstruction to the compression of the stock of the insole.

In Figs. 11 and 12 a modified construction is shown in which a single rack bar 270 engages through teeth on its opposite edges with pinions 272 to turn shafts 274. Each of these shafts is provided with a collar 275 having on its front face near one edge an ear upon which is mounted a roll 276. The shaft 274 also supports a disk 278 that is loose on the shaft and held against the roll 276 by a spring 180. The disk 278 has a depression 182 in the path of the roll 276 and located in suitable angular position so that when the machine comes to rest the roll stands in the recess. The disk 278 is connected by the link 184 to the front end portions of a heel embracing band or clamp 185. This clamp and its actuating mechanism are adapted to serve the purpose of the band 26 and its pads 35 and 36. The front end portion of the shaft 274 is toothed to move the carrier 190, which is provided with a presser blade 192 and a wiper 194, together with tack driver bars 196 constructed and arranged for inserting tacks, substantially as described in connection with the main views.

In the use of the machine a shoe, which may have been previously lasted and welted, may be applied to the spindle 65 as indicated in dotted lines in Fig. 1. The shoe is swung into the full line position, during which movement it is thrust into the heel embracing band and stopped against the yieldingly supported pad 35. The pad together with the band will have been positioned by the adjusting device 30 so that shoes of the average size to be operated upon in a single adjustment of the parts

will be stopped with the butt end portions of the welt and the forward portions of the heel stiffener in suitable relation to the pads 36 and the presser blades 50, which relation may be substantially that shown in Fig. 6, it being understood that the pads 36, the presser blades and other devices at the opposite sides of the shoe occupy their separated or retracted positions when the shoe is thrust into the band. The spring 34 permits some variation in the position of the shoe in accordance with the judgment of the operator in order that the shoe may be located correctly with relation to the devices that are to operate upon it. When the shoe has been properly positioned the treadle 4 is depressed and through the rack bars 6 rotates the shafts 10. These shafts through the devices connected with them first move the pads 36 against the sides of the shoe at and adjacent to the end portions of the heel stiffener, clamping the upper and heel stiffener against the sides of the last at and adjacent to the end portions of the stiffener. As the pressure increases the area of contact spreads from the lower edges of the pads upwardly to the edge of the shoe, thus working any slack material toward the edge of the shoe and firmly clamping the shoe stock against the sides of the last. The presser blades are also actuated inwardly to engage the shoe stock in the welt crease, exerting their inward pressure against the upper and the welt and finally against the insole to force the shoe stock and the insole inwardly toward the middle of the last, tightening the upper and stiffener over the edge of the last and holding it under tension. The blocks 55 insure the clamping engagement of the upper edge portions of the pads with the shoe stock at the edges of the last at both sides thus cooperating with the presser blades in conforming the stock snugly to the contour of the last. The wipers 60 move inwardly with the presser blades and by the engagement of their roughened surfaces with the upper face of the welt assist in tightening the shoe stock over the edge of the last and holding it in proper relation to the last bottom. The wipers may also position the butt ends of the welt to receive the securing tacks. Both the pads 36 and the presser blades 50 are yieldingly connected with the carrier 40 so that these devices may adapt themselves without adjustment to different sizes or widths of shoes and to the different contours of the right and left sides of a shoe. If desired, the treadle may be moved up and down to press the stock into position by repeated movements of the described devices engaging the shoe. To enable such repeated movement of the treadle to be effected without liability of actuating the clutch a sliding stop 199 may be arranged, as shown in Figs. 1 and 2,

to stand normally under the carrier 111 and prevent the treadle being depressed far enough to disturb the clutch. This stop device is arranged to be readily withdrawn against the tension of its spring 198 when the stock has been forced into position to be compressed and secured. A final or further depression of the treadle serves to move downwardly the carrier 111 and when the plate 115 slides off the tails of the pawls 118 the pawls engage the ratchet teeth on the carrier and through the described connections cause the clutch controlling device 98 to be withdrawn from the path of the pin 96, whereupon the clutch bolt is automatically thrown into engagement with the continuously rotating pulley 92 and the shafts 90 and 85 are caused to make one complete revolution and are then arrested by the clutch controlling device. In this rotation of the shafts the crank 84 effects the elevation of the heel spindle, thus forcing the shoe upwardly against the wipers 60 and compressing the stock covered by the wipers against the bottom face of the last. While the stock is held under compression the crank 160 effects the driving of the tacks which may be inserted in the relation to the shoe indicated at 1 in Fig. 6, or in any other suitable relation. It will be noted that the wipers act at and adjacent to the location of the heel breast. By compressing this stock a firm seat is made for the heel, and the securing tacks, which are driven while the stock is so held, and prevent it from being forced outwardly by the compression which is incident to the heel attaching operation. During the power actuation of the machine the tack supplying devices are operated to separate tacks and to deliver them through the conductors 124 to the tack blocks 152 when the carriers 40 reach their outermost position. The yielding connections 125, 126 between the treadle and the rack bars 6 permit the final depression of the treadle for operating the clutch. It will be understood, however, that in this further depression of the treadle the springs 126 exert a final pull upon the rack bars, tending to force the wipers 60 inwardly over the shoe bottom while the shoe is being lifted against these wipers by the mechanism actuated from the clutch. The compression of the shoe stock is therefore effected by a relative movement of the last and pressers vertically and also a movement of the pressers inwardly so that a pressure oblique to the last bottom and inclined inwardly is effected just before the tacks are driven.

The tacking mechanism is preferably arranged as may be seen in Fig. 7 to drive the tacks in a direction inclined slightly inwardly so that if the tacks are long enough to extend through the innersole their points

will strike obliquely against the usual iron plate on the bottom of the heel portion of the last and be clenched inwardly instead of outwardly. This provision avoids the liability of the tacks being turned outwardly where they might project into the upper and it also insures that the tacks shall have a drawing tendency to force the upper still more tightly into the last.

Having explained the nature of this invention and described a preferred construction embodying the same, I claim as new and desire to secure by Letters Patent of the United States:—

1. A machine for working the upper into lasted position adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising means constructed and arranged to engage the shoe stock at opposed sides of the shoe locally at or near the ends of said stiffener and tighten the upper over the edge of the last, and mechanism for fastening the upper.

2. A machine for working the upper into lasted position adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising means constructed and arranged to engage the shoe stock at opposed sides of the shoe and force the upper over the last bottom simultaneously at the two sides, and mechanism operatively connected with said means for inserting fastenings in position to hold the upper.

3. A machine for working the upper into lasted position adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising means constructed and arranged to engage the shoe stock at opposed sides of the shoe and tighten the upper about the last, and automatically operated mechanism for inserting fastenings at the opposite sides of the shoe to secure the upper while it is held in tightened relation to the last.

4. A machine for working the upper into lasted position adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising devices constructed and arranged to engage the shoe stock and force the upper inwardly and upwardly over the edge of the last at the two sides of the shoe and to hold the upper under tension, and mechanism operating automatically to drive fastenings simultaneously for securing the upper at the two sides of the shoe.

5. A machine for working the upper into lasted position adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising devices constructed and arranged to engage the flange at opposite sides of the shoe and tighten the upper over the edge of the last, and mechanism operating automatically to secure the upper while it is held tight at the two sides of the last.

6. A machine for tightening the upper

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of a welt shoe adjacent to the ends of the heel stiffener, having means for engaging the butt end portions of the welt at opposite sides of the shoe and pressing the welt inwardly over the shoe bottom, and means for securing the end portions of the welt while they are held pressed inwardly.

7. In a machine of the class described, manually controlled means including devices constructed and arranged to engage a lasted welt shoe below the welt for tightening the upper over a last at opposed sides of the last simultaneously, and automatic mechanism for inserting fastenings to hold the upper at the two sides of the last.

8. In a machine of the class described, means constructed and arranged to tighten the upper over a last at points adjacent to the two ends of the heel stiffeners simultaneously, and automatic mechanism for inserting fastenings to hold the upper at the two sides of the last combined with means to sustain the shoe for the action of the tightening devices in a predetermined plane relatively to the shoe bottom and to support the shoe substantially unyieldingly against the impact of the fastening inserting mechanism.

9. In a machine of the class described, manually controlled means including devices constructed and arranged to engage a lasted welt shoe below the welt for tightening the upper over a last at opposed sides of the last simultaneously and connected mechanism for inserting fastenings automatically when a predetermined force has been applied to tighten the upper.

10. A machine for tightening the upper of a welted shoe adjacent to the ends of the heel stiffener, having means for engaging the shoe stock in the welt crease, actuating means therefor under control of the operator, and automatically driven means for inserting fastenings to secure the upper.

11. A machine for tightening the upper of a welted shoe adjacent to the ends of the heel stiffener, having means for engaging the shoe stock in the welt crease, actuating means therefor under control of the operator, and automatically driven means for compressing the stock upon the last bottom.

12. A machine for tightening the upper of a welted shoe adjacent to the ends of the heel stiffener, having means for engaging the shoe stock to force the upper over the edge of the last at the two sides of the shoe, said means having provision for controlling the position of the butt ends of the welt, and means for securing the upper.

13. A machine for tightening the upper of a welted shoe adjacent to the end of the welt, having means for entering the welt crease, means for engaging the opposed side of the welt, and mechanism for actuating said two means to press the welt and the at-

tached upper inwardly over the edge of the last.

14. A machine for tightening the upper of a welted shoe adjacent to the ends of the welt, having means for engaging the opposed sides of the rear end portion of the welt, mechanism for actuating the engaging means inwardly relatively to the shoe bottom to tighten the upper attached to the welt, and means for inserting fastenings in position to secure the upper.

15. A machine for tightening the upper of a welted shoe adjacent to the ends of the welt, having means arranged at opposite sides of the shoe for entering the welt crease, means for engaging the upper side of the welt, and actuating mechanism for causing the upper to be forced inwardly at the two sides of the shoe at the same time.

16. A machine for tightening the upper of a welted shoe adjacent to the ends of the welt, having means arranged at opposite sides of the shoe for entering the welt crease, means for engaging the upper side of the welt, mechanism for actuating said means to force the upper at the two sides of the shoe inwardly at the same time and hold it, and mechanism for fastening the upper while it is so held.

17. A machine for use in making shoes having manually controlled means for engaging shoe stock in the welt crease on opposed sides of the shoe and forcing it inwardly over the edge of a last, fastening inserting means movable inwardly with said engaging means, and power driven means for causing the insertion of fastenings after the upper has been tightened.

18. A machine for use in making shoes, having means for engaging shoe stock on opposed sides of the shoe and forcing it inwardly over the edge of a last, fastening inserting means movable inwardly with said engaging means, and connected mechanism under control of the operator for effecting and controlling the inward movement of the engaging means and for starting the power driven means.

19. A machine for tightening the upper of a welted shoe adjacent to the ends of a welt, having means constructed and arranged for movement to engage the shoe stock on opposed sides of the shoe and to adapt themselves automatically to the size and shape of the shoe, and actuating mechanism therefor to cause the upper to be forced over the edge of the last and held in position to be secured.

20. A machine for tightening the upper into lasted position adjacent to the ends of the heel stiffener of a shoe having an out-turned flange, comprising means constructed and arranged to engage the flange at opposite sides of the shoe and to adapt themselves automatically to the size and

shape of the shoe, actuating mechanism therefor, and fastening inserting means movable with said engaging means into inserting relation to the tightened upper.

21. A machine for tightening the upper adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising means for positioning the shoe, devices constructed and arranged to engage the flange at opposite sides of the shoe, means for actuating the engaging devices inwardly and also upwardly to strain the upper, and means for inserting fastenings to secure the upper at the two sides of the shoe.

22. A machine for tightening the upper adjacent to the ends of the heel stiffener of a shoe having an outturned flange, comprising means for supporting the shoe, devices constructed and arranged to engage the shoe stock at opposite sides of the shoe for forcing the upper inwardly over the edge of the last, and means for effecting vertical compression of the heel seat end portion of the shoe bottom.

23. A machine for tightening the upper of a welted shoe into lasted position adjacent to the rear end of the in-seam, comprising means for engaging the shoe stock to force the upper over the edge of the last, and means for compressing the stock at the rear end of the in-seam to shape the heel seat end of the shoe bottom.

24. A machine for use in making shoes, comprising means constructed and arranged to tighten an upper over a last edge adjacent to the end of the heel stiffener, and means for leveling that portion of the bottom of the lasted shoe over which the breast portion of the heel is to be applied.

25. A machine for use in making shoes, comprising means constructed and arranged to tighten an upper over a last edge adjacent to the two ends of the heel stiffener, and means for leveling the heel seat portion of the shoe bottom while the upper is held tightened.

26. A machine for use in making shoes, comprising means constructed and arranged to tighten an upper over a last adjacent to the end of the heel stiffener, means for effecting compression of the shoe in a direction perpendicular to the bottom thereof and in the region over which the breast portion of the heel is applied, and means for inserting a fastening to secure the upper.

27. A machine for tightening the upper of a welted shoe into lasted position adjacent to the rear ends of the in-seam, comprising means for engaging the shoe stock to force the upper over the edge of the last, means for leveling the rear end portion of the in-seam while the upper is held, and means for securing the upper.

28. A machine for use in making shoes,

having means for engaging the upper adjacent to the ends of the heel stiffener to tighten it over the last, means for overlaying the shoe bottom adjacent to the ends of the stiffener, means for relatively moving said latter means and the shoe to effect compression of the stock of the shoe bottom, and means for inserting fastenings to secure the upper.

29. A machine for use in making shoes having an outturned flange, comprising means for engaging the upper under the flange and means for engaging the upper side of the flange whereby the upper may be forced upwardly and inwardly to tighten it about the last, and means for relatively moving said last-named engaging means and the last to compact the upper on the last bottom.

30. A machine for use in making shoes having an outturned flange, comprising means for engaging the upper under the flange at either side of the shoe, means arranged to extend over the flange, means for relatively moving the shoe and the engaging means to tighten the upper, and means for relatively moving the shoe and the means extending over the flange to compress the stock on the shoe bottom.

31. A machine for use in making shoes having an outturned flange, comprising devices arranged at either side of the shoe to extend under the flange, cooperating devices to extend over the flange and inwardly over the shoe bottom, means for actuating said devices to press and wipe the shoe stock inwardly from opposite sides of the shoe simultaneously, and means for relatively moving the shoe and said devices to compress the stock of the shoe bottom vertically.

32. A machine for use in making shoes having an out-turned flange, comprising devices arranged at either side of the shoe to extend under the flange, cooperating devices to extend over the flange and inwardly over the shoe bottom, means for actuating said devices to press and wipe the shoe stock inwardly from opposite sides of the shoe simultaneously, means for relatively moving the shoe and said devices to compress the stock of the shoe bottom vertically, and means for fastening the upper in its inwardly pressed position while it is held by said devices.

33. In a machine for use in making shoes, means constructed and arranged to engage a shoe in the welt crease for tightening an upper over the edge of a last adjacent to the end of the heel stiffener, combined with automatically operated mechanism for compressing the stock of the shoe bottom in the direction of its thickness and securing the upper in its tightened relation to the last.

34. In a machine for use in making shoes, means for tightening an upper over the edge

of a last adjacent to the ends of the heel stiffener simultaneously at the opposite sides of the last, combined with automatically operating mechanism for leveling the shoe bottom and fastening the upper in its tightened relation to the last.

35. A machine for use in making shoes, comprising a shoe support, a presser for engaging the side of the shoe, a wiper to extend over the shoe bottom, and automatically operated mechanism for compressing the overworked marginal portion of the upper and the innersole of the shoe between said support and wiper and for driving tacks.

36. A machine for use in making shoes, comprising a shoe support, pressers arranged to engage each side of the shoe adjacent to the ends of the heel stiffener, wipers to extend over the shoe bottom, actuating mechanism to cause said devices to tighten the upper, and automatically operated mechanism for compressing the stock of the shoe bottom.

37. A machine for use in making shoes, comprising a shoe support, pressers arranged to engage each side of the shoe adjacent to the ends of the heel stiffener, wipers to extend over the shoe bottom, actuating mechanism to cause said devices to tighten the upper, and automatically operated mechanism for compressing the stock of the shoe bottom and inserting a plurality of fastenings through the compressed stock simultaneously.

38. A machine for use in making shoes, comprising means for engaging the shoe stock at opposite sides of a lasted shoe adjacent to the ends of the heel stiffener and tightening it over the last bottom, and means for driving fastenings simultaneously at the two sides of the shoe in directions to cause the tacks to exert an inward draft on the upper and to clench away from the edge of the shoe.

39. A machine for use in making shoes, comprising means for forcing inwardly the upper of a shoe bottom from opposite sides of the shoe simultaneously, and means operated automatically to compact the upper on the shoe bottom and drive fastenings simultaneously in directions inclined inwardly from the two sides of the shoe.

40. A machine for use in making shoes, comprising means arranged to engage the side of the shoe adjacent to the end of the heel stiffener, actuating means for causing the area of engagement to spread toward the edge of the last whereby the upper is worked upwardly on an inverted last, means for forcing the upper over the edge of the last, and means for securing the upper upon the shoe bottom.

41. A machine for use in making shoes, comprising means arranged to engage the

side of the shoe adjacent to the end of the heel stiffener, actuating means for causing the area of engagement to spread toward the edge of the last whereby the upper is worked upwardly on an inverted last, means for forcing the upper over the edge of the last, means operated automatically to compress the stock of the shoe bottom, and means for securing the upper.

42. A machine for use in making shoes, comprising means arranged to engage the side of the shoe adjacent to the ends of the heel stiffener, actuating means for causing the contact of said engaging means with the upper to progress toward the edge of the last on the two sides of the shoe simultaneously, means for working the upper over the edge of the last, and means operated automatically for shaping the stock on the last bottom to form a seat for the outersole.

43. In a machine for use in making shoes, connected mechanism for tightening an upper of a lasted and welted shoe over the edge of the last, compressing the stock of the shoe bottom and fastening the upper.

44. A machine for use in making a shoe having an outturned flange, comprising connected mechanism for engaging the shoe stock at the flange to tighten the upper over the edge of the last, compressing the shoe stock on the last bottom, and fastening the upper.

45. A machine for use in making a shoe having an outturned flange, comprising connected mechanism for engaging the shoe stock at the flange on the two sides of the shoe to tighten the upper over the opposite edges of the last simultaneously and for inserting fastenings to secure the upper.

46. In a machine for use in making shoes, connected mechanism constructed and arranged to engage the shoe stock adjacent to the ends of the heel stiffener on opposite sides of the shoe simultaneously to tighten the upper over the edge of the last, to compress the shoe stock for forming a seat for the outersole, and to insert fastenings at the two sides of the shoe at the same time for securing the upper.

47. A machine for use in making shoes, comprising plates arranged for movement inwardly over the end portions of the in-seam and heel stiffener, and automatically operated mechanism for effecting compression of the portion of the shoe bottom covered by said plates and for inserting tacks in the shoe bottom.

48. A machine for use in making shoes, comprising means arranged for movement inwardly over the end portion of the in-seam and heel stiffener, mechanism for effecting relative movement of said means and the shoe to compact the in-seam and

heel stiffener against the innersole, and means for inserting fastenings into the shoe stock while it is held under compression.

49. In a machine of the class described, a resilient heel embracing band having its end portions split lengthwise to form separate tongues and a pad supported by and bridging said tongues at each end of the band.

50. In a machine of the class described, a resilient heel embracing band formed to present normally the lower edges of its opposite end portions nearer together than its upper edges, pads secured to said end portions, and actuating means constructed and arranged relatively to the band to close the lower edge portions of the pads first against the shoe and then bend the band to cause the points of engagement to progress toward the upper edges of the pads.

51. In a machine of the class described, a resilient heel embracing band formed to present normally the lower edges of its opposite end portions nearer together than its upper edges, pads secured to said end portions, means for closing the pads against the shoe, and other means for forcing inwardly the upper edges of the pads to clamp the edges of the shoe.

52. In a machine of the class described, a resilient heel embracing band and actuating mechanism therefor, including relatively yielding devices respectively connected with the body of the band adjacent to the end portions and operatively engaged with the upper edge of the band.

53. In a machine of the class described, a resilient heel embracing band and actuating mechanism therefor, including relatively yielding devices respectively connected with the body of the band adjacent to the end portions and operatively engaged with the upper edge of the band, said machine having provision for causing the upper edges of the band to be forced into clamping position after the body of the band.

54. A machine of the class described, having a wiper arranged for movement over the shoe bottom, a presser arranged to engage the shoe stock in the welt crease and inclined upwardly toward the wiper, combined with suitable actuating means.

55. A machine of the class described, having a wiper arranged for movement over the shoe bottom, a presser arranged to engage the shoe stock in the welt crease and inclined upwardly toward the wiper, and means for actuating the wiper inwardly over the shoe bottom while yieldingly actuating the presser inwardly and upwardly against the insole in the welt crease.

56. A machine of the class described, having a wiper to engage the shoe stock on the last bottom, a presser to engage the shoe stock in the welt crease, and means for

clamping the shoe stock to the side of the last at and adjacent to its edge.

57. A machine of the class described having, in combination, the wide thin edged blade 50 mounted for engagement in the welt crease at the rear of the shank of a welted shoe to tighten the upper materials at the end of the insole and hold them while they are being fastened, and a support upon which said blade is mounted for limited rotary movement about an axis that is substantially perpendicular to the side face of the shoe to permit the blade to adapt itself to the spring of the shoe edge.

58. A machine of the class described, having means for gathering slack from the side of the shoe and forcing it to the edge of the last at the opposite sides of the shoe, means for engaging the shoe stock at the ends of the insole to tighten it over the last, and means for fastening the upper while it is held.

59. A machine of the class described, having means engaging the shoe stock at the insole to tighten it over the edge of a last, means for effecting compression of the shoe stock against the last bottom, and means for inserting tacks while the upper is under compression.

60. In a machine of the class described, a heel embracing band constructed and arranged to clamp the shoe stock to the last at and adjacent to the ends of the heel stiffener, means arranged at opposite sides of the last to wipe the correspondingly located portions of the shoe stock over the last bottom, and connected operating mechanism for said two means.

61. In a machine of the class described, a heel embracing band constructed and arranged to clamp the shoe stock to the last at and adjacent to the ends of the heel stiffener, means arranged at opposite sides of the heel of a last to force correspondingly located portions of the shoe stock over the edge of the last, means for inserting tacks to secure the upper, and connected mechanism for actuating said two means constructed and arranged to allow the operator to inspect the work before the tacks are driven.

62. In a machine of the class described, means arranged at opposite sides of a last to force correspondingly located portions of the shoe stock over the edge of the last, means for inserting tacks to secure the upper, and connected mechanism for actuating said two means constructed and arranged to permit a plurality of partial operations of the machine for forcing the upper into position before the tack inserting devices are actuated.

63. In a machine of the class described, means arranged at opposite sides of a last to force correspondingly located portions of

the shoe stock over the edge of the last, means for inserting tacks to secure the upper, and mechanism for actuating said two means constructed and arranged to permit the upper manipulating means to be operated without necessarily actuating the tack inserting means.

64. A machine of the class described, having a presser to engage a shoe in the welt crease, a wiper to engage the opposed side of the welt, and means for actuating the presser and wiper to force the upper over the last.

65. In a machine of the class described, a resilient heel embracing band, a pad carried by each end of the band and arranged to engage the side of the shoe at and adjacent to the front end portion of the heel stiffener, means for actuating the band to cause the pads to clamp the shoe stock against the side of the last, and other means for actuating the pad to clamp the shoe stock against the edge of the last.

66. In a machine of the class described, a heel embracing band, and means for supporting the band, comprising the rod 28 having two relatively movable parts, the spring for pressing the band forwardly, and means for adjusting the rear part for the purpose described.

67. In a machine of the class described, a back gage comprising an abutment, a carrier therefor, having two sections constructed and arranged to permit a limited amount of relative endwise movement, a spring for holding the abutment carrying section projected to the limit of said relative movement, a support, and means arranged to permit adjustment of the other section in the support.

68. In a machine of the class described, a heel embracing band and operating mechanism therefor, comprising an actuator, the bell cranks 15 having yielding connection with the end portions of the band, and connections including the screw-threaded shafts 10 with the actuator.

69. In a machine of the class described, a heel embracing band, a tacking mechanism, a treadle, a connection from the treadle to the band to cause the latter to clamp the upper to the last, and a connection to the tacking mechanism to cause the latter to be operated for forcing the upper over the last bottom and securing it.

70. A machine of the class described, having wipers arranged for movement from opposite sides of the heel over the last bottom, means for effecting vertical compression of the shoe stock between the wipers and the last bottom, and power driven means for inserting tacks.

71. A machine of the class described, having wipers arranged for movement from opposite sides of the heel over the last bot-

tom, means for effecting vertical compression of the shoe stock between the wipers and the last bottom, and power driven means for inserting tacks, said machine having provision for permitting repeated movements of the wipers without necessarily actuating the tack inserting means.

72. A machine of the class described, having wipers arranged for movement from opposite sides of the heel over the last bottom, and means for effecting vertical compression of the shoe stock between the wipers and the last bottom, said machine having provision for pressing the wipers inwardly during said vertical compression.

73. A machine of the class described, having unyielding wipers arranged for movement from opposite sides of the heel over the last bottom, and connected mechanism for simultaneously raising the shoe against the wipers and pressing the wipers inwardly.

74. A machine of the class described, having means for tightening the shoe stock over the last bottom at and adjacent to the two end portions of the heel stiffener simultaneously, means for compressing the shoe stock against the last bottom at and adjacent to the location of the heel breast, and means for securing the stock while it is under compression.

75. A machine for use in making shoes, having means for tightening the shoe stock over the bottom of a laced shoe, means for determining the position of the shoe longitudinally in the machine, and automatically driven mechanism for compressing and securing the stock at and adjacent to the location of the heel breast line of the shoe.

76. A machine for use in making shoes, having substantially unyielding means formed to cover a small portion of the length of a welted shoe, and means to actuate it for tightening and leveling the shoe stock of the in-seam on the two sides of a shoe at and adjacent to the location of the heel breast line of the shoe.

77. A machine for use in making shoes, having automatically operating means for forcing inwardly over the last bottom, compressing and securing the shoe stock of the in-seam on the two sides of the shoe simultaneously at and adjacent to the location of the heel breast line of the shoe.

78. In a machine of the class described, the combination with suitable actuating mechanism, of a shoe support, and means co-operating therewith to compress and level the shoe stock of the end portions of the in-seam at and adjacent to the heel breast line of the shoe, said machine having means to position the shoe with the in-seam ends in appropriate relation to said last named means to receive the action thereof.

79. A machine of the class described, hav-

ing means for engaging a lasted and welted Goodyear welt shoe below the welt for tightening the upper over the last, means for securing the upper, and means for actuating the forcing means and causing the actuation of the securing means, said machine having provision for effecting an additional movement of the forcing means when the securing means is caused to operate.

80. A machine of the class described, having means for forcing an upper over a last, power driven mechanism for securing the upper, and means under control of the operator for actuating the forcing means and starting said power driven mechanism, said machine having provision for causing a further pressure by the power upon the forcing means when the securing means is operated.

81. A machine for use in making shoes having a presser to tighten an upper over a last, a wiper, means for relatively actuating the wiper and last to compress the stock between them, and means for retracting the presser in predetermined time relation to the compressing movement.

82. A machine for use in making shoes having means for pressing the upper over a last, means for compressing the upper upon the last bottom, and means for automatically withdrawing the first mentioned means during the operation, of the compressing means.

83. A machine for use in making shoes having a presser, manually operated means for advancing the presser over the shoe bottom and power operated means for retracting the presser.

84. A machine for use in making shoes having a presser, manually operated means for advancing the presser over the shoe bottom, a yielding connection between the presser and said means, and automatically operated mechanism for retracting the presser with relation to its manually operating means.

85. A machine for use in making shoes having a presser, a tacker, means for advancing the presser, means for actuating the tacker and connections for retracting the presser during the tack driving operation.

86. A machine for use in making shoes having devices for working an upper over the edge of a last, means for driving tacks to secure the upper and mechanism for automatically actuating the tack driving means and moving the overworking devices in a direction reverse to their overworking movement preliminary to the insertion of the tacks.

87. A machine for use in making shoes having, in combination, devices which clasp the heel portion of a shoe and force the upper materials to the last at the sides of the heel and over the last bottom, means for inserting fastenings to secure the upper in

such condition, power driving mechanism for said means, a manually operated treadle and connections for so actuating said devices to clasp the heel and to force the upper over the last bottom and thereafter connecting said fastening means to its power driving mechanism.

88. A machine for working upon a lasted and welted shoe, comprising means for engaging the shoe stock to tighten the upper over the edge of the last at the rear end of the in-seam, means for leveling the rear end portion of the in-seam, and means for securing the rear end portion of the welt.

89. A machine of the class described, having means for engaging a lasted and welted shoe to tighten the upper inwardly over the edge of the last at the rear end of the in-seam, means to secure the upper, and means including a support for the shoe to compress the stock upon the last bottom at the rear end of the in-seam.

90. A machine of the class described, having in combination, a shoe support or holder, means for working into lasted position the upper of a welted shoe adjacent to the end of the in-seam, said means being constructed and arranged to engage the shoe between the upper and welt to tighten the upper about the last, and means for securing the upper while it is held in tightened condition.

91. A machine of the class described having, in combination, short thin blades or plates arranged to act locally at the front end of the heel seat of a shoe to force the upper and the flange of the heel stiffener ends into lasted relation to the innersole lip, and means for actuating said plates at the two sides of the shoe simultaneously in opposite directions transversely of the shoe and without substantial movement lengthwise of the shoe.

92. A machine of the class described having, in combination, plates to engage an upper at the opposite sides of a shoe to tighten it over the last edge toward the lip of the innersole, means arranged to clamp the stock from above to hold it from retraction until it is fastened while the plates are withdrawn, said machine being arranged for withdrawal of said plates prior to the fastening of the upper.

93. A machine of the class described having, in combination, wiper plates to tighten an upper over the edge of a last, mechanism to apply fastenings to secure the upper, means for relatively moving the shoe and a member that is associated with said fastening applying mechanism to compress and flatten the stock upon the last bottom, and means for withdrawing the wiper plates while the upper is held by said mechanism and before the application of the flattening compression.

1,023,854

18

94. A machine of the class described having, in combination, wiper plates to tighten an upper over the edge of a last, means for manually operating said plates, upper securing mechanism, and means for automatically retracting the wiper plates in time relation to the operation of the securing mechanism.

95. A machine of the class described having, in combination, opposed wiper plates for connections to a manually operated device for actuating them, a power driven tacker and heel seat compressor, and means for retracting the wiper plates in time relation to the operation of the tacker and compressor.

96. A machine of the class described having, in combination, a wiper plate to tighten an upper over the edge of a last, and a member arranged to engage the upper in advance of the edge of the wiper and hold it in tightened condition, and mechanism to retract the wiper and insert securing tacks while the upper is so held.

97. A machine of the class described having, in combination, a wiper plate to tighten an upper over the edge of a last and a member arranged in a plane above the wiper and with relation to which there is relative inward and outward movement and which is adapted to engage the upper in advance of the acting edge of the wiper and hold it while the wiper is retracted.

98. A machine of the class herein described having, in combination, means for supporting a lasted and welted shoe, means arranged to engage in the crease between the upper and the welt adjacent to its end to tighten the upper, and means to fasten the upper.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE L. KEYES.

Witnesses:

ARTHUR L. RUSSELL,

BERTHA M. HUTCHINSON.

Correction in Letters Patent No. 1,023,854.

It is hereby certified that in Letters Patent No. 1,023,854, granted April 23, 1912, upon the application of Eugene L. Keyes, of Boston, Massachusetts, for an improvement in "Machines for Use in the Manufacture of Shoes," an error appears in the printed specification requiring correction as follows: Page 10, line 103, for the word "seams" read *means*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of May, A. D., 1912.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

A. A. MACLEOD.
LASTING MECHANISM.
APPLICATION FILED NOV. 8, 1911.

1,030,519.

Patented June 25, 1912.

Fig. 1.

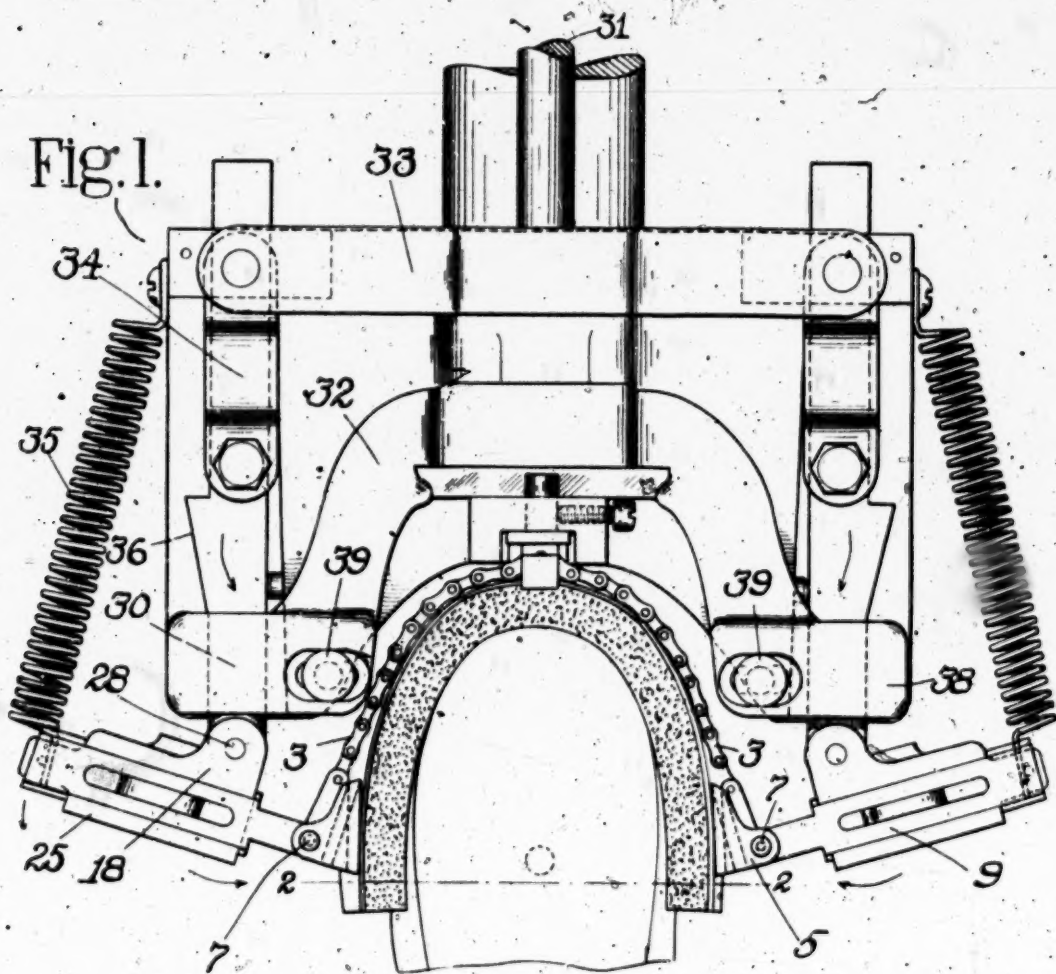


Fig. 2.

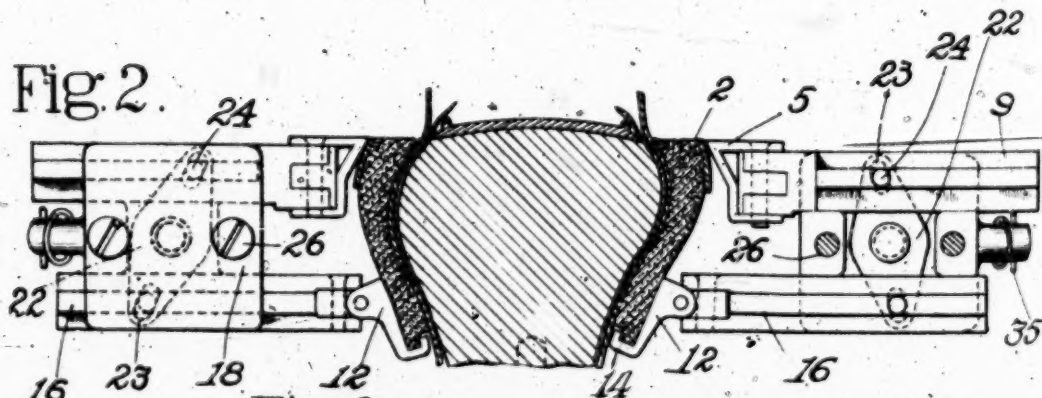
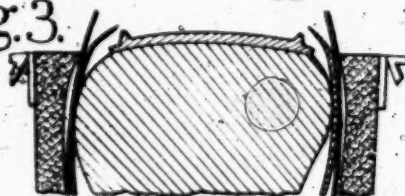


Fig. 3.



WITNESSES

Elizabeth C. Couper
Mary E. Morrison

INVENTOR.

A. A. Macleod
By his Attorney,
Kearney & Howard

UNITED STATES PATENT OFFICE.

ALBERT A. MACLEOD, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING MECHANISM.

1,030,519.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed November 8, 1911. Serial No. 659,181.

To all whom it may concern:

Be it known that I, ALBERT A. MACLEOD, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented certain Improvements in Lasting Mechanisms, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to lasting machinery of the "bed" type and is herein shown as embodied in the heel lasting mechanism of United States Letters Patent No. 1,002,818, granted September 12, 1911 on application of Matthias Brock.

The object of this invention is to secure more effective lasting, or conformation of the shoe stock to the contour of the last, of the sides of the shoe end and particularly of the heel end. The conformation of the shoe stock to the sides of the heel portion of the last is effected in the bed type of machine largely by the heel band.

By prior inventions the heel band has been actuated to clamp the upper materials snugly about the last at its upper edge to cooperate with the wipers or lasting plates that go over the shoe bottom to form the upper correctly at the edge of the shoe. As heretofore used these bands do not, however, adequately clamp the upper materials to the last below the edge of the shoe and along the upper edge of the heel stiffener. This portion of the stiffener, and the upper leather outside it, has therefore not been conformed closely to the last but has in many instances stood away from the last more or less and the completed shoe has not only been lacking in the shape or outline that its designer and the last maker intended it to have but it has failed to clasp or hug the heel portion of the wearer's foot as it should do and, if an "Oxford" shoe or a "pump," it has often slipped up and down on the heel in an objectionable way.

A feature of this invention is found in the provision of end band actuating mechanism which will cause a band to embrace the end portion of a shoe snugly at a distance removed from the edge of the shoe as, for example, which will cause a heel band to clamp the upper and stiffener against the

sides of the heel along the upper edge of the stiffener.

Another feature of this invention consists in the combination with end band closing mechanism, of additional means to force hard against the sides of the last the edge of the band which is remote from the sole face of the shoe.

A further feature of the invention consists in the combination with known band closing mechanism of devices arranged to be actuated therefrom and to force the lower edge of the band to clamp the underlying portions of the upper and heel stiffener to the sides of the heel portion of the last.

Advantageously, and as herein shown, the new clamping devices are connected by equalizers with the closing mechanism so that said devices and mechanism may adapt themselves automatically to different contours of last sides.

These and other features of the invention, including certain details of construction and combinations of parts will be hereinafter described and pointed out in the claims.

Figure 1 is a plan view, partially broken away, of the heel head of a lasting machine of the type referred to; Fig. 2 is a vertical section on the line 2-2 of Fig. 1 looking rearwardly after the band has been closed; and showing the cover plate removed on the right of said figure. Fig. 3 is a contrasting view before the band is closed.

The heel lasting mechanism in general and the known band closing mechanism in particular may be like that shown in said Brock patent where the heel band 2 is embraced by a chain 3 which is connected by end pieces 5 to chain arms 9 by pivot pins 7. The chain arms 9 are carried in blocks or levers 18 that are pivoted at 28 to slide bars 30, and have their outward extensions engaged by contractile springs 35 which tend to pull the band forwardly about pivots 28. The bars 30 are connected by links 34 to the cross head 33 of a plunger 31 from which power is applied to carry the chain arms bodily forward and, when the shoe resists further movement in that direction, to force the blocks 18 to turn about pivots 28 in the direction to press the band ends inwardly. This inward movement of the band ends is supplemented by wedge faces 36 on the slide bars 30 which, in the

forward movement of said bars, engage abutments 38 and wedge the band ends toward the shoe sides. The abutments 38 are formed on an equalizing yoke 32 which can
 5 slide transversely of the machine by slots and pins 39 to provide the same pressure on each side of differently shaped lasts.

With the aforesaid closing mechanism I have combined devices for clamping the
 10 lower edge of the band to the sides of the heel and for this purpose each block 18 is formed with a guideway in which the chain arm 9 can slide endwise. The block is also provided with a lower guideway in which a
 15 new arm 16, pivotally connected by a head piece 12 to the lower edge of the band, is also mounted to slide endwise. The block is recessed to receive the lever 22 which is fulcrumed to it and has in the ends of its
 20 upper and lower arms slots 23 by which it has engagement with studs 24 on the bars 9 and 16 for actuating both said bars. By reason of its fulcrum connection with the block 18 the lever actuates the two bars in
 25 proportion to the length of its arms and furthermore permits relative adjusting or self-adapting movements of the arms 9 and 16 for lasts of different shapes. The head piece 12 has a hook 14 by which it engages
 30 under the band and in a recess in the inner face of the band so that it can move the band edge outwardly as well as inwardly. A cover plate 25, secured by screws 26, confines the arms 9 and 16 and the equalizer
 35 lever 22 within the block 18.

In the use of the heel lasting mechanism equipped with the invention the band closing mechanism operates as described in said patent with this addition, that the band
 40 closing pressure is transmitted by the block 18 through the lever 22 and arm 16 to the lower portion of the band as well as to its upper edge portion and the lever acts as an equalizer to close the lower portion of the
 45 band about the narrow part of the heel and there to apply clamping pressure equally to both lower and upper portions of the band ends.

Having explained the invention and described how it may be used, I claim as new and desire to secure by Letters Patent of the United States:

1. An end lasting mechanism having, in combination, an end embracing band, closing mechanism having engagement with the
 55 end portions of the band near its upper edge, and additional closing devices having engagement with the end portions of the band near its lower edge.

60 2. An end lasting mechanism having, in

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combination, an end embracing band, closing mechanism having engagement with the portions of the band near its upper edge, and separate devices connected with said mechanism and with the end portions of the band near its lower edge to cause said devices to clamp the heel stiffener to the last at its edge remote from the last bottom.

An end lasting mechanism having, in combination, an end embracing band, closing mechanism having engagement with the portions of the band near its upper edge, a separate point of engagement with the band near its lower edge, and an equalizer through which force is applied to compress the band widthwise to the contour of the side of the last and clamp the shoe by the edges of the band.

An end lasting mechanism having, in combination, an end embracing band, closing mechanism having engagement with the end portions of the band near its upper edge, and comprising a chain arm connected with the upper edge of the band; a second arm connected with the lower edge of the band, a block in which the arms are adapted to slide endwise, and an equalizer connecting said arms to each other and to the block.

An end lasting mechanism having, in combination, an end embracing band, closing devices connected with the upper and the lower parts of the band ends, an actuator for said devices, and an equalizer connecting said devices together and to the actuator for the purpose described.

A heel lasting mechanism comprising an end embracing band and closing mechanism therefor connected with the upper portions of the band ends, in combination with means for applying band closing pressure to the lower parts of the band ends.

A heel lasting mechanism having, in combination, an end embracing band, a closing device arranged to press against the upper part of the band end, and a second closing device formed to hook under the lower portion of the band and up into the band for supporting support and outward actuation of the band end, and means for applying pressure to the band end through the operation of said devices.

A testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALBERT A. MACLEOD.

Witnesses:

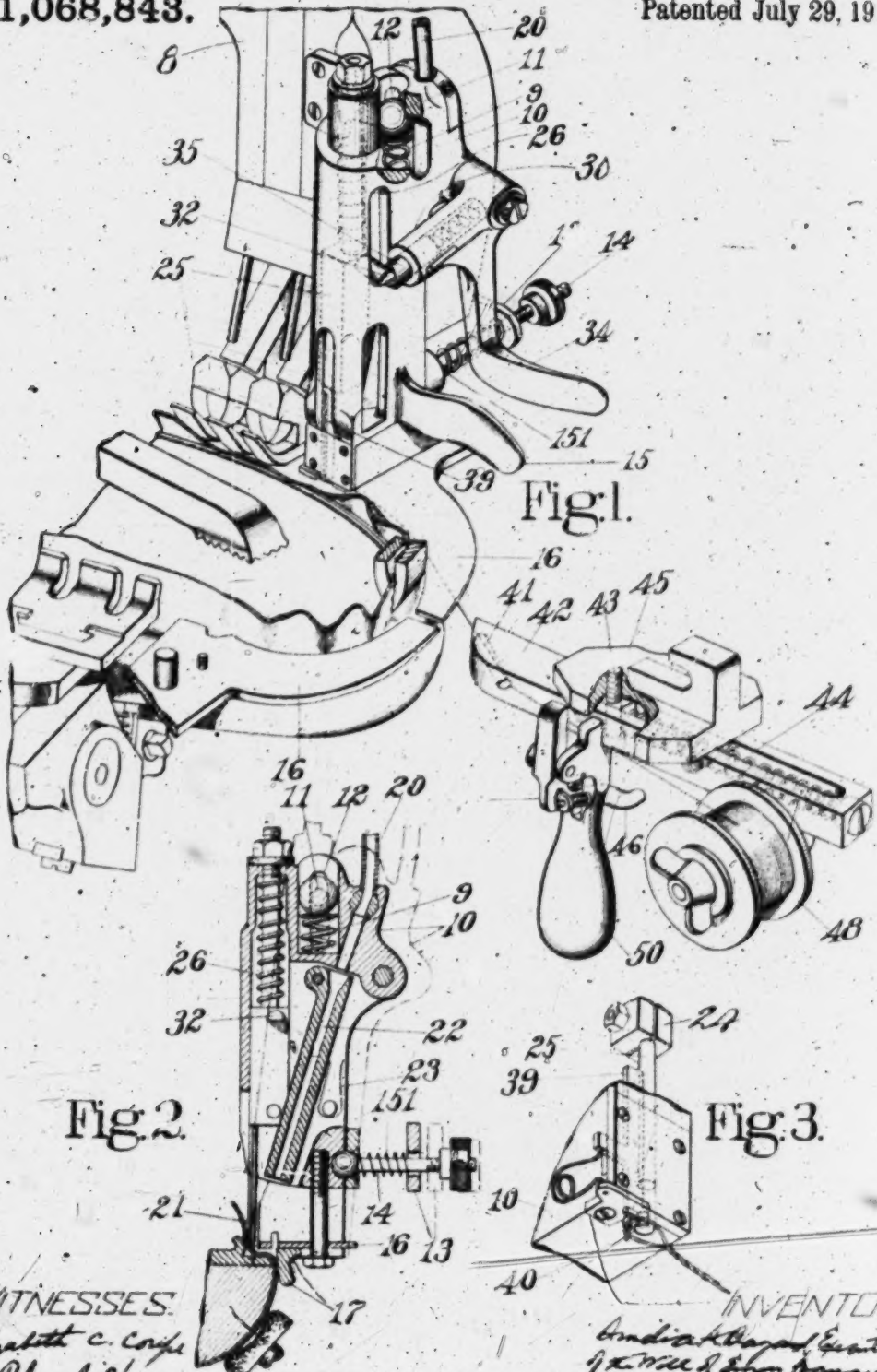
ARTHUR L. RUSSELL,
HERBERT W. KENWAY.

E. BAYARD, DEC'D.
A. A. BAYARD, EXECUTRIX.
TOE WIRING DEVICE.

APPLICATION FILED OCT. 30, 1911.

1,068,843.

Patented July 29, 1913



WITNESSES:

Elizabeth C. Coyle
Blanche Hargrave

INVENTOR

Emilia Bayard
By her Attorney, Edmund H. Ward

UNITED STATES PATENT OFFICE. 261

EMERY BAYARD, DECEASED, LATE OF ROCHESTER, NEW YORK, BY AMELIA A. BAYARD, EXECUTRIX, OF ROCHESTER, NEW YORK, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TOE-WIRING DEVICE.

1,068,843.

Specification of Letters Patent.

Patented July 29, 1913.

Original application filed June 17, 1910, Serial No. 567,529. Divided and this application filed October 30, 1911. Serial No. 657,538.

To all whom it may concern:

Be it known that EMERY BAYARD, deceased, late of Rochester, in the county of Monroe and State of New York, invented certain Improvements in Toe-Wiring Devices, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to shoemaking machines and particularly to apparatus for temporarily securing upper material in lasted position, this application being a division of application Serial No. 567,529 filed June 17, 1910, for machines for use in the manufacture of boots and shoes. By the machine illustrated in that application the upper is pulled over a last and the toe portion of the upper is worked into lasted position over the bottom of the shoe and secured with the aid of the toe binding device herein shown. In that application are to be found the claims for the various combinations of the overworking means and the toe binding device, the claims for said binding device *per se* being made in this application.

A feature of this invention is to be found in means for carrying a wire around the toe of the shoe to bind the upper in lasted position. In the illustrated embodiment of this invention the wire carrier is mounted for manual operation. It is also arranged so that it can be used to bind one corner of the toe after the upper has been overworked, as by one wiper, and can thereafter be further actuated to bind in the other corner when that is ready to be secured. This binding device is also equipped with a tension device by which the wire can be held taut in position to secure one corner of the upper while the other corner is being lasted. The tension device includes means arranged to be engaged by one finger of that hand of the operator by which the carrier is being moved whereby the tension can be increased or diminished as the binding or the placing of the wire proceeds about the toe. As advised it is new by this invention to provide for varying the tension as the wire carrier moves to place a binder about the toe of a shoe. In accordance with the illustrated embodi-

ment of this invention, a reel for holding a supply of wire is mounted on and movable with the wire placing device so that excess of wire is not drawn off, as it would be from a stationary reel, when the device reaches backwardly to carry the binder into position to be anchored; also a spring is arranged to return the wiring device to an out of the way position while it is not in use. These and other features of this invention including certain details of construction and more important combinations of parts will be explained in the following description of a preferred embodiment of the invention and will then be pointed out in the claims.

Figure 1 is a perspective view of the wire carrying means and the associated parts; Fig. 2 is a sectional view illustrating some of the associated parts which prepare the shoe for the application of the wire and may anchor the wire; Fig. 3 is a perspective view from a different angle of the means for anchoring the end portion of the wire held by the wire carrier.

The invention is herein shown for the purpose of explanation as applied to a machine like the well-known commercial pulling-over machine shown and fully described in United States Letters Patent No. 1,029,387 granted June 11, 1912, and in British Patent No. 12,394 of 1903 corresponding thereto. It is not necessary herein to show, or to describe, that machine and its operation except in those particulars in which it cooperates with the lasting devices of the present invention, which are arranged to operate after the shoe upper has been pulled and adjusted upon the last and while the shoe is held in the machine with the upper under tension over the last, the power driven mechanism of the machine being temporarily at rest. It is contemplated that the machine shall be organized to come to rest with the side clamps closed against the sides of the shoe and the automatically actuated in-swinging tack carrying arms at the sides of the machine in their tack inserting positions over the shoe.

In the embodiment of the invention first to be described an attachment, shown in Fig. 2 is loosely applied to each side tack arm 8. The body portion of the attachment is indicated at 10, Fig. 2, and the con-

nection with the arm is made by a ball headed pin 11 which projects from the tack arm through a slot 12 into a spring chamber in the upper portion of body 10. The slot, ball and spring 9 allow sufficient play to permit the attachment to be moved, as will be suggested, automatically and by the handle 15. The lower portion of the body 10 is connected yieldingly to the automatically moved arm 8 by a rod 14 and an ear 13 which acts through a spring 151 to hold the lower end of the attachment tilted inwardly relatively to the tack arm. In this relative position the attachment approaches the shoe with the arm 8 and rides over the shoe bottom until it is stopped by an abutment and then the upper portion of the attachment 10 is carried forwardly, its lower face fulcrums on the edge of the shoe bottom, the spring 151 yielding if necessary to allow this movement, and the inner edge of the attachment, or of the wiper 16 carried thereon, tips downwardly to compress the upper down upon the feather of the shoe innersole and into the angle between the feather and the lip or shoulder of the innersole where it should be secured.

The body 10 supports the curved lasting plate 16 which has an inner acting edge shaped to fit the corner of the shoe approximately and to extend forwardly toward the middle of the toe. The lasting plate is carried automatically by its carrying arm 8 transversely of the shoe into approximate lasting position over the shoe bottom. By means of the handle 15 the operator further moves the plate 16 as may be required for forcing the upper into lasted position over one corner of the last, the loose connection 12 with the tack arm permitting sufficient freedom of manual movement transversely of the shoe and also rotatively for this purpose and also permitting enough vertical movement to enable the desired downward pressure upon the upper to be effected for molding it into lasted position upon the innersole. The two independent plates 16 of the two attachments permit separate lasting of the two corners of the toe. This arrangement also allows conformation to the differences found in the toe portions of right and left crooked lasts.

The tack driver of the prior machine is omitted from the front tack arm and, in place of the usual tack conductor tube leading thereto, two tubes 20 are diverted from the automatically operated multiple tack supplying apparatus of the machine and led to the attachments 10 at either side of the machine. Each attachment is provided with a tack pocket 21, Fig. 3, with which cooperates a swinging tube 22 connecting with the conductor 20, and is further provided with a manually operated tack driver 24 on a driver bar 25. This bar is impelled down-

wardly by a spring 26 and stands normally down in the position shown in Fig. 3, and while in this position, a tack is fed through the conductor and comes to rest in the lower end of the swinging tube 22. The driver is lifted, when the operator desires to insert a tack, by force transmitted through the bell crank 30 to the stud 32 projecting from the side of the driver bar. The bell crank has the handle 34 located adjacent to the handle 15 to be conveniently operated in connection with the latter and it has the bevel ended spring plunger 35 which is automatically withdrawn from stud 32 when the driver has been lifted. As the driver bar is raised it allows the tube 22 to be swung by its spring 23 into position to deliver a tack to the pocket under the driver where it is inserted by the downcoming of the driver under influence of its spring 26. The driver bar returns the tube 22 to the position shown in Fig. 3. When the bell crank is reversely moved the plunger 35 snaps under the stud 32 for use again.

The attachment at one side of the machine will preferably have a provision as at 40 for retaining an eye or loop which has been previously formed in the end of a binding wire and through which the tack from the pocket 21 is driven to anchor the wire at one end. The tack pocket has a slot through which is movable a yieldingly upheld blade 39, see Fig. 3, which is depressed by the driver bar and extends slightly below the tack driving face of the bar. The blade 39 serves to force the wire down off the projection 40 and to a level to be tightened around the stem of the tack below its head.

While the foregoing is an example of mechanism with which my toe binding device may advantageously be used, said device is adapted for use separately from any such mechanism and for the purpose of binding toes as a more or less independent operation without regard to when or by what means the toes have been prepared for the binding operation. The toe binding wire is led through a guideway 41 in a wire placing arm 42 which has a pin 43 and a slot 44 connection with a plate 45 on the lower end of its support which is shown as the front tack arm of the machine and which may have an automatic movement from its inoperative position, as in said British patent, into an appropriate position adjacent to the shoe for the toe wiring operation to be effected. The wire passes from the guide under a tension lever 46 to a reel 48 which is carried by the wire placing arm. The wire placing arm has a rigidly attached handle 50 by which the arm is turned and slid under the plate 45 for drawing the wire around the toe of the shoe under the wiper plates 16 where it is held under tension in binding relation to the overwiped upper

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while the machine is restarted to release the shoe, after which the wire will be twisted around the tack which has been driven at the second side of the shoe in the same manner that a hand operator is accustomed to twisting the wire around the anchor tack in binding by hand. The possibility which this apparatus affords for lasting one corner of the toe at a time and binding it in by the wire before the second corner is necessarily lasted and bound gives opportunity for the workman to last the toe in the pulling-over machine progressively and to exercise great skill and care in obtaining a smooth, well formed toe and binding it tightly. It is contemplated that the pulled over shoe turned out by the machine equipped with this invention will be in condition for presentation to the welt sewing-machine without further treatment of its forepart.

Having fully explained the nature of this invention and described how it may be embodied in suitable mechanism, I claim as new and desire to secure by Letters Patent of the United States:

1. A machine of the class described having, in combination, a support, a wire carrying device connected to said support and movable relatively thereto about the toe of a lasted shoe, and a separate tension device carried thereon through which the wire is drawn as it is bound about the shoe and having means under the operator's control for enabling him to apply through such device a substantially constant resistance to the pull of the wire in different positions of the carrying device.

2. A machine of the class described having, in combination, a wire placing arm, a support therefor movable to carry the arm into wire placing position, and upon which the arm is movable to place the wire around the toe portion of a shoe.

3. A machine of the class described having, in combination, a wire placing arm, a support to which the arm is connected to permit it to slide endwise and to turn to place the wire around the toe portion of a shoe.

4. A machine of the class described having, in combination, a wire placing arm, a support therefor movable to carry the arm into wire placing position, and upon which the arm is movable to place the wire around the toe portion of a shoe, and return means for restoring the arm to a position from which it has been moved.

5. A machine of the class described having, in combination, a wire placing arm, a support therefor on which the arm can move to present its wire guiding front end adjacent to the side of the shoe for the wire end to be anchored, and a spring against the action of which said movement is made and which reacts to hold the wire under tension between the anchoring point and the arm.

6. A machine of the class described having, in combination, a wire placing arm, a support therefor on which the arm can slide and turn to present its wire guiding front end adjacent to the side of the shoe for the wire end to be anchored, and a spring which allows free turning of the arm but resists said sliding movement outwardly and draws the arm backward to apply tension to the anchored portion of the wire.

7. A machine of the class described having, in combination, a wire placing arm, a support therefor on which the arm can move to present its wire guiding front end adjacent to the side of the shoe for the wire end to be anchored, a normally operative tension device acting on the wire carried by said arm and manual means for setting said tension device hard against the wire while drawing the arm backward to tighten the wire and a spring arranged to exert a constant backward pull on the arm to hold the wire taut.

8. A machine of the class described having, in combination, a support, a wire placing arm pivotally and slidingly mounted on said support, a reel carried on one side of the arm, a wire guideway extending obliquely through the arm from said side to the other one, and a tension device located between the reel and the guideway, substantially as and for the purpose described.

9. A machine of the class described having, in combination, a wire placing arm, a support on which said arm is pivotally and slidingly mounted, a handle by which movements of said arm can be effected, and a tension device having a finger operated lever arranged adjacent to said handle to be manipulated by that hand of the workman which grasps the handle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMELIA A. BAYARD,

Executrix of the will of Emery Bayard.

Witnesses:

TERESSA H. BAYARD,

G. WILLARD RICH.

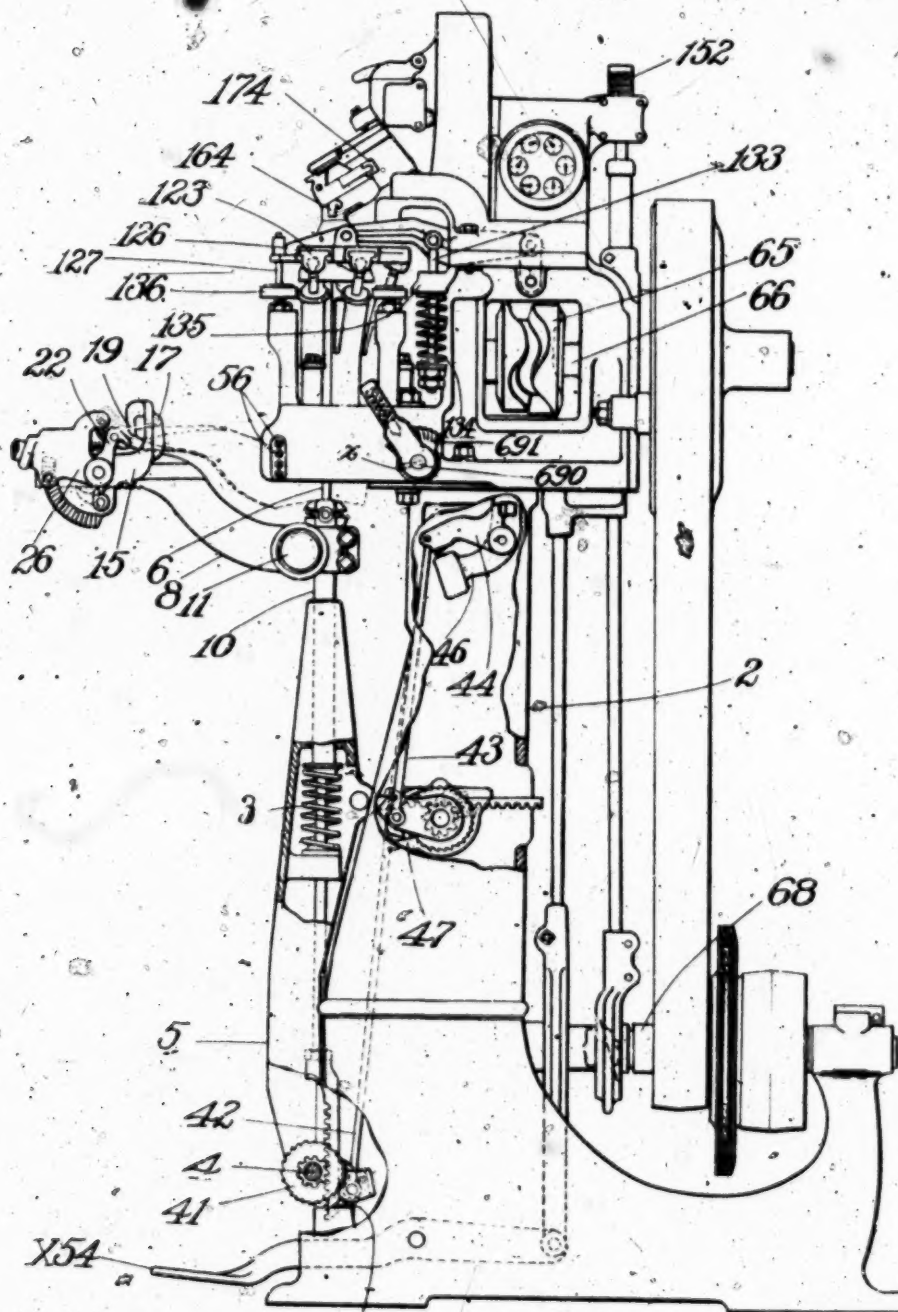
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R. F. McFEELY.
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.
APPLICATION FILED AUG. 14, 1909.

1,129,881.

Patented Mar. 2, 1915.

SHEETS-SHEET 1



WITNESSES: 47

Fig. 1.

INVENTOR:

Elizabeth C. Coupe
Edith C. Hallbrook

Ronald F. McFeely
By [Signature]
[Signature]

R. F. McFEELY.

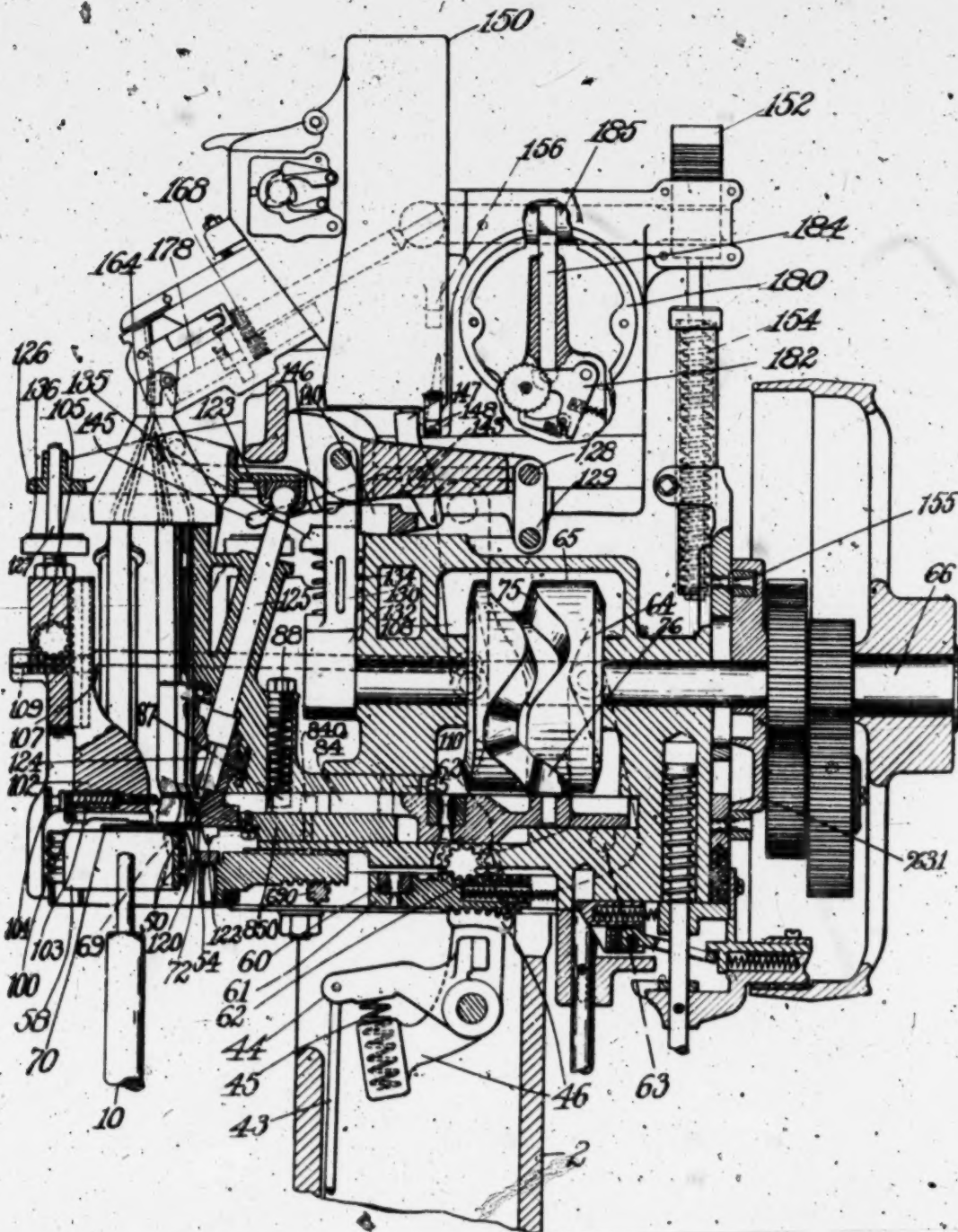
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

APPLICATION FILED AUG. 14, 1909.

Patented Mar. 2, 1915.

9 SHEETS-SHEET 2

1,129,881.



WITNESSES.

Elizabeth C. Coyle
Edith C. Hollbrook

Fig. 2.

INVENTOR.

Ronald F. McFeely
By his Attorneys
V. L. & Co.

R. F. McFEELY.

MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

APPLICATION FILED AUG. 14, 1909.

Patented Mar. 2, 1915.

9 SHEETS-SHEET 3.

1,129,881.

Fig. 3.

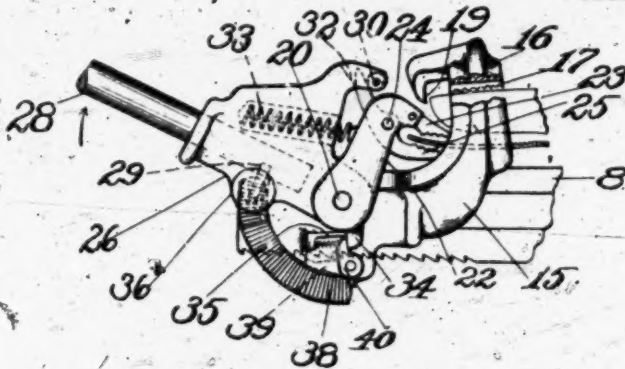


Fig. 4.

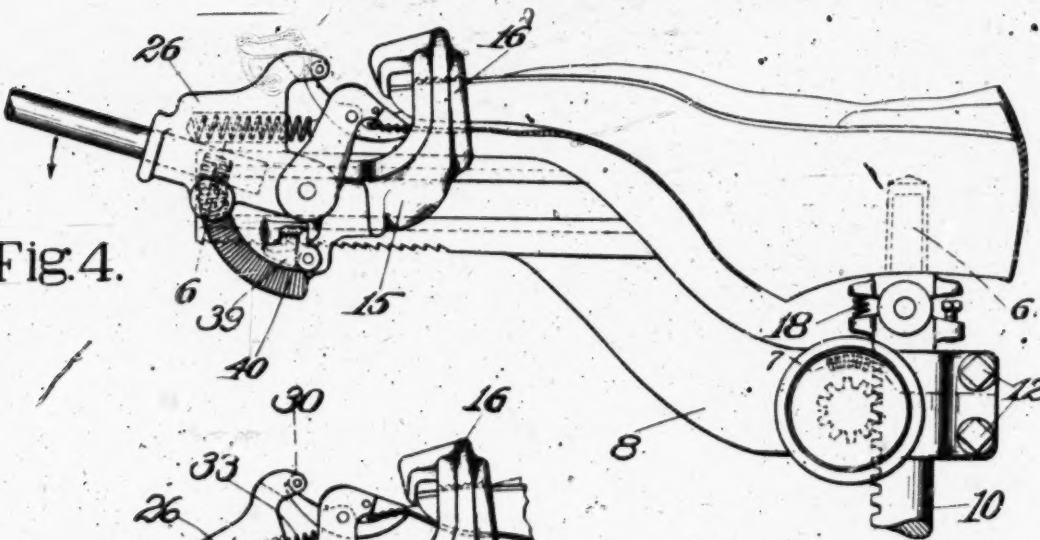


Fig. 5.

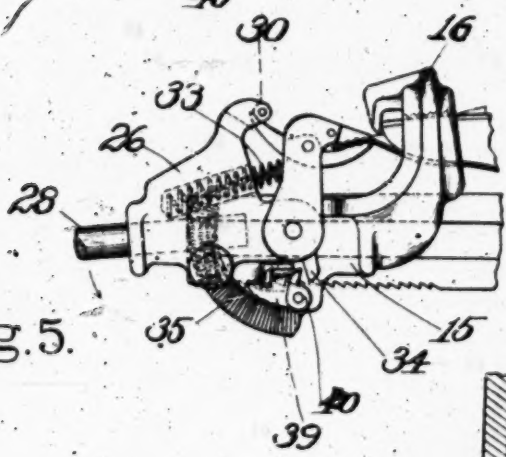
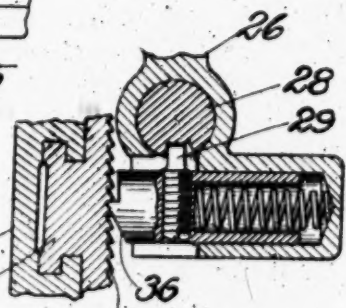


Fig. 6.



WITNESSES.

Elyaketh C. Coyle
Edith C. Hoffmann

INVENTOR.

Ronald E. McFeely
By his Attorney

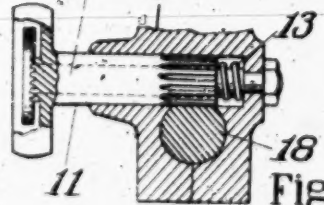


Fig. 7.

Nelson M. Howard

2

R. F. McFEELY.
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,129,881.

APPLICATION FILED AUG. 14, 1909.

Patented Mar. 2, 1915.

9 SHEETS—SHEET 4.

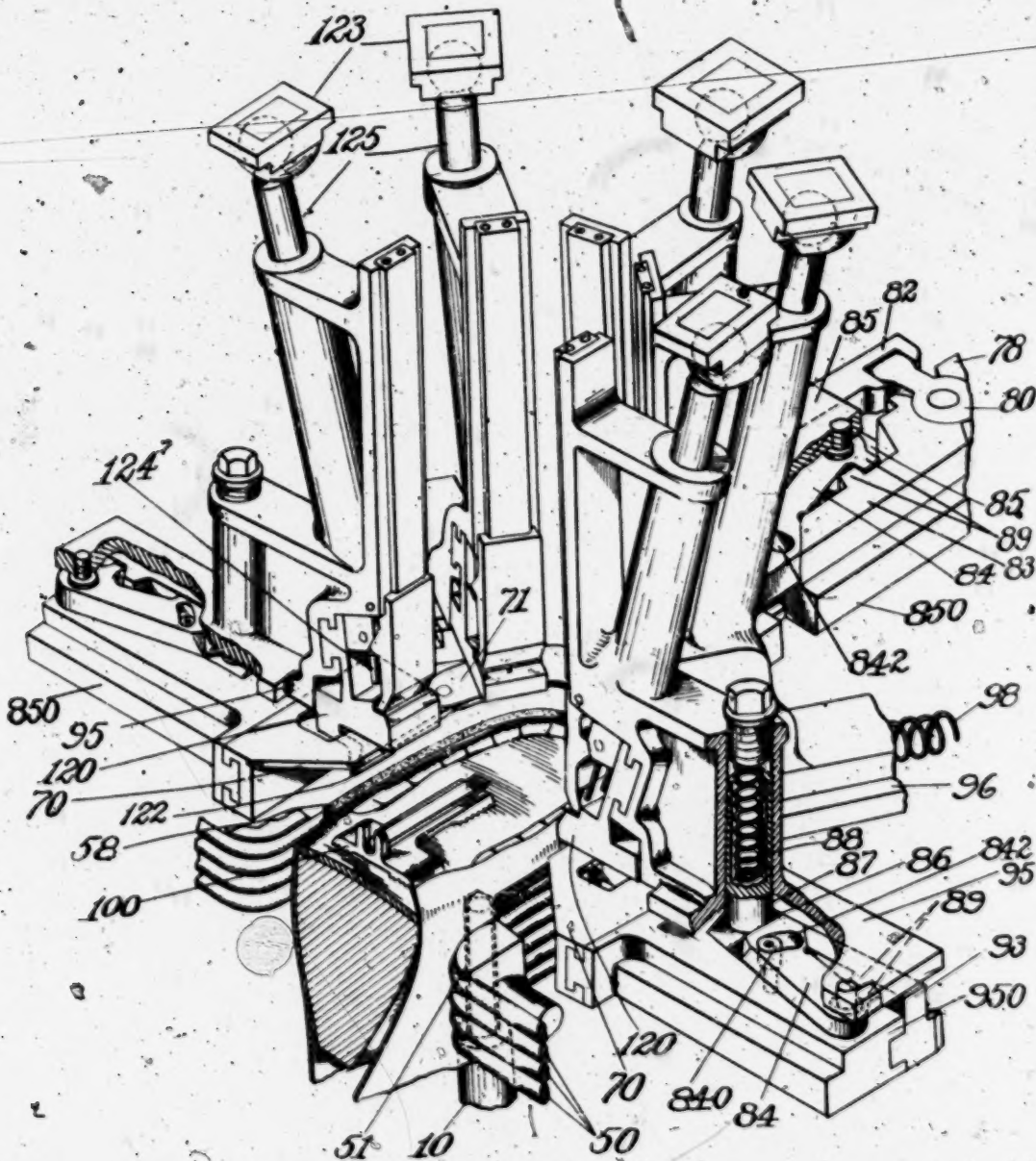


Fig. 8.

WITNESSES.

Elizabeth C. Coyle
Eliott C. Holbrook

INVENTOR.

Ronald F. McFeely
By his Attorney
Nelson & Co.

1,129,881.

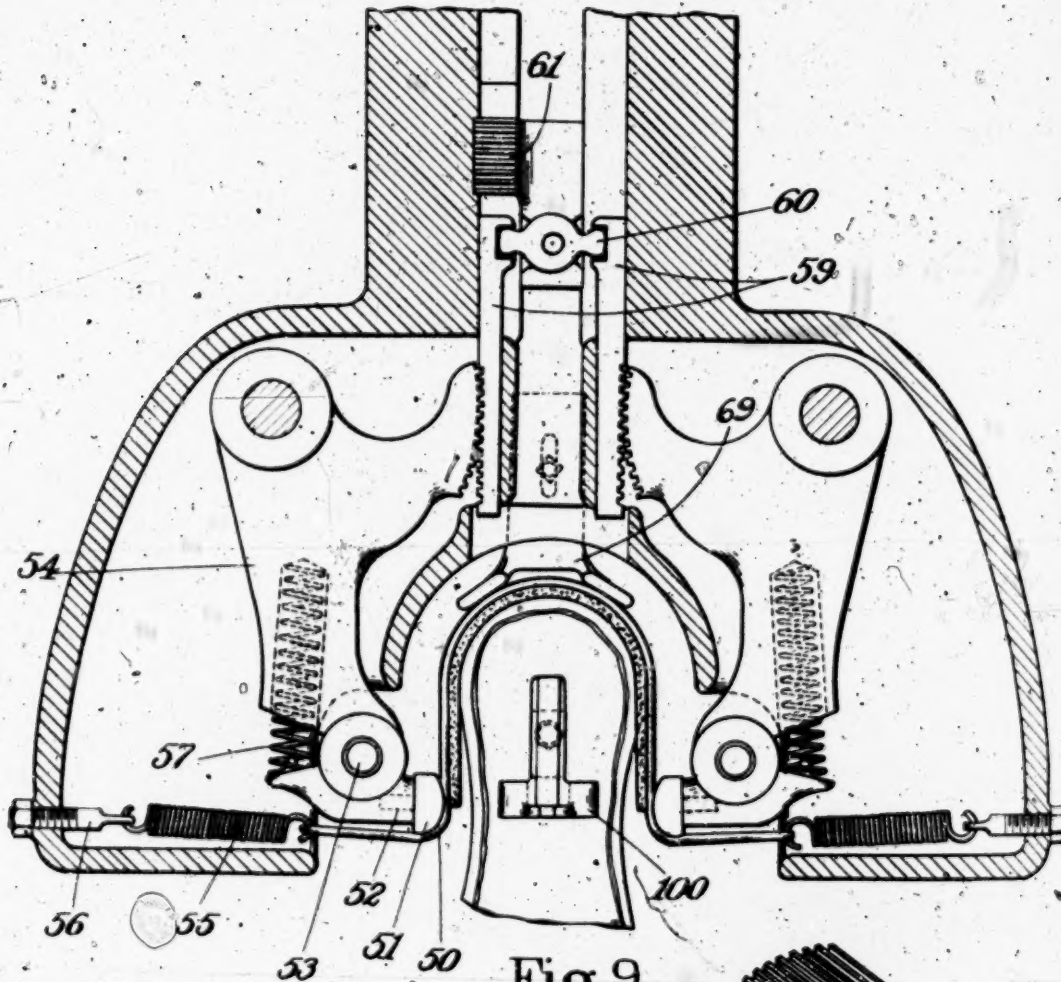


Fig. 9

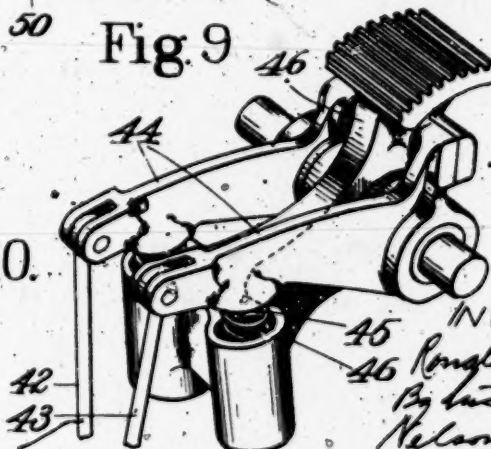


Fig. 10.

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

APPLICATION FILED AUG. 14, 1909.

1,129,881.

Patented Mar. 2, 1915.

9 SHEETS—SHEET 6

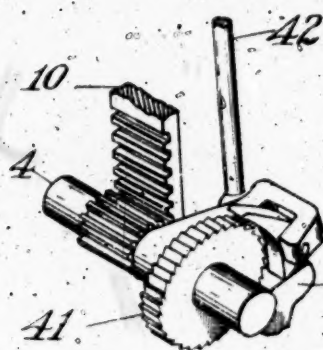


Fig. 11.

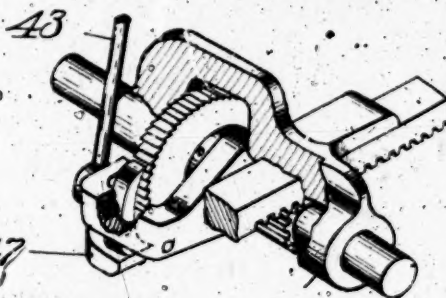


Fig. 12.

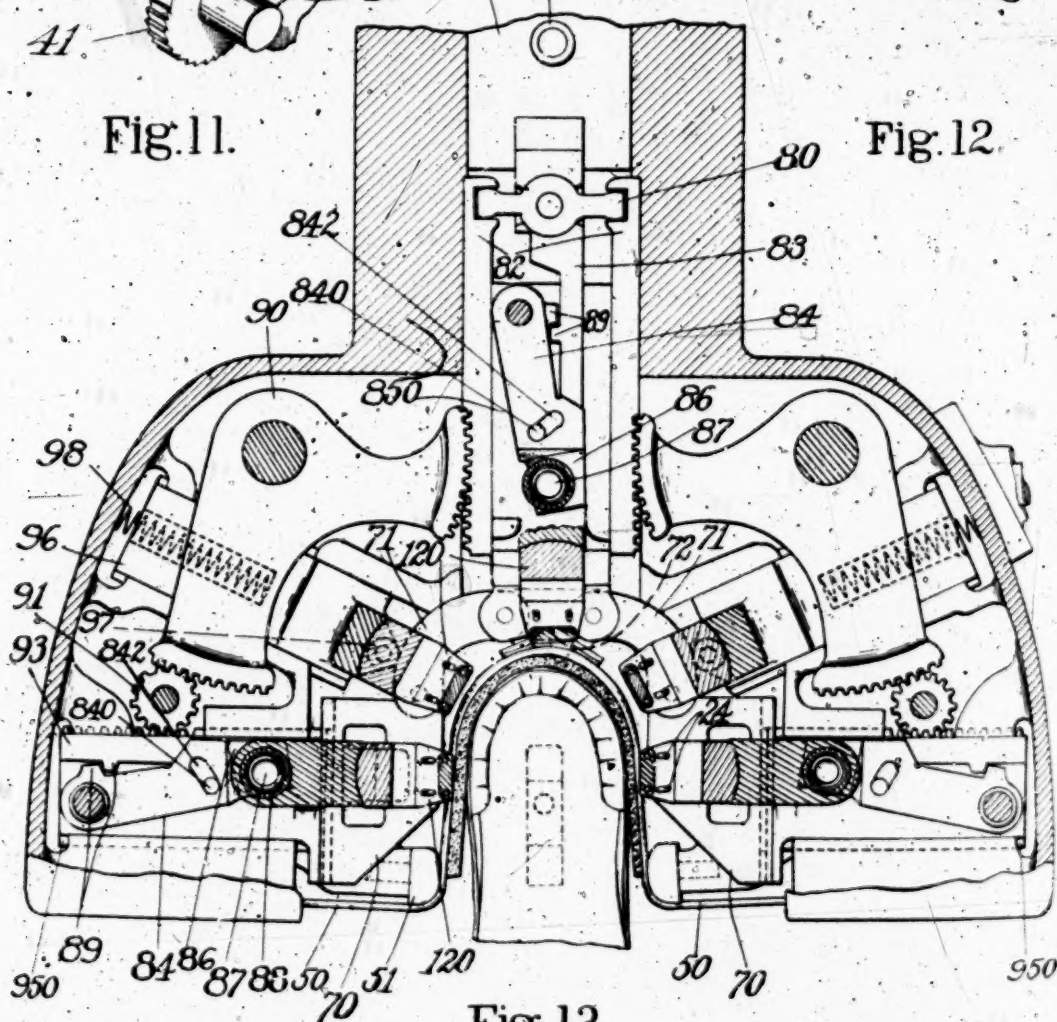


Fig. 13.

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9 SHEETS—SHEET 7.

1,129,881.

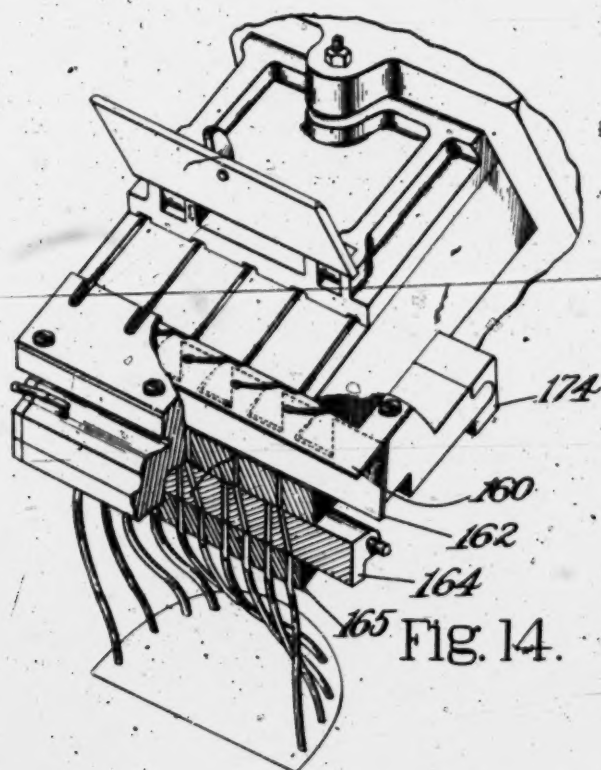


Fig. 14.

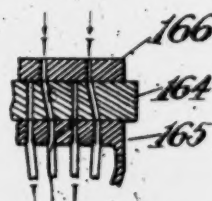


Fig. 16.

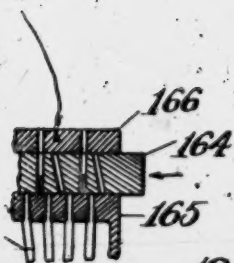


Fig. 15.

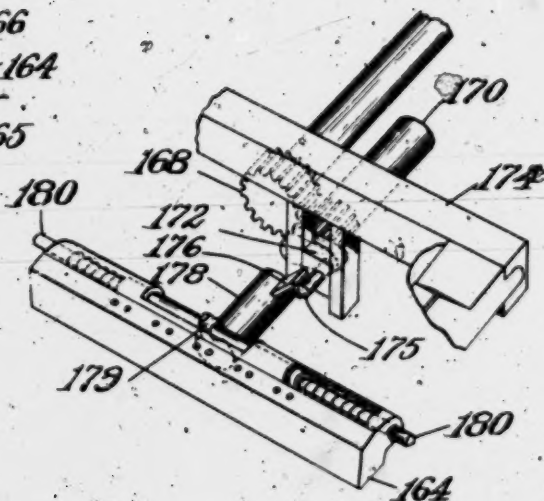


Fig. 17.

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

APPLICATION FILED AUG. 14, 1909.

Patented Mar. 2, 1915.

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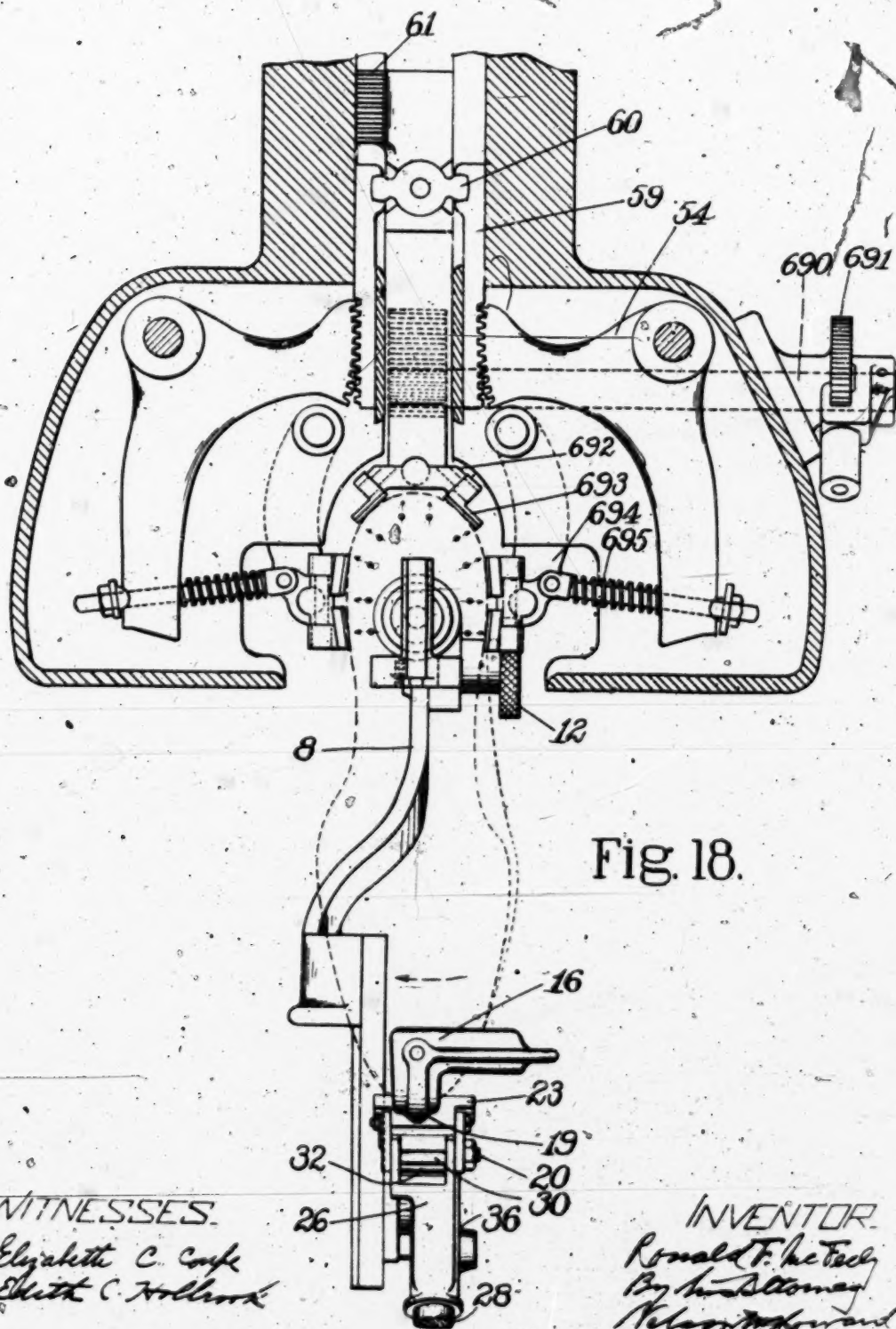


Fig. 18.

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

APPLICATION FILED AUG. 14, 1909.

1,129,881.

Patented Mar. 2, 1915.

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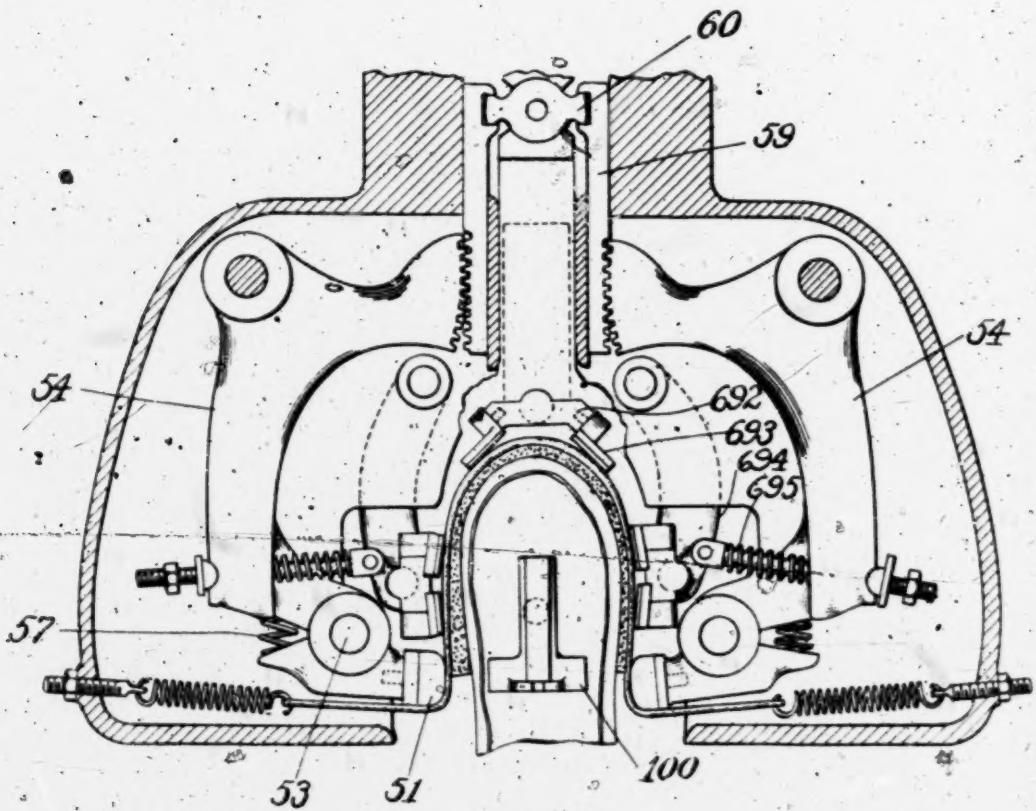


Fig. 19.

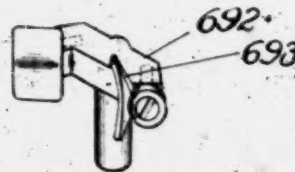


Fig. 20.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,129,881.

Specification of Letters Patent.

Patented Mar. 2, 1915.

Application filed August 14, 1909. Serial No. 512,904.

To all whom it may concern:

Be it known that I, RONALD F. McFEELY, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Use in the Manufacture of Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to the manufacture of boots and shoes.

A broad object of the invention is to produce a machine which shall combine the operations of assembling a shoe and lasting the heel seat, operations heretofore performed by separate machines and as distinct steps in the manufacture of a shoe. The assembling operation as heretofore performed includes positioning the innersole and the upper materials, including the upper, lining and heel stiffener, in proper relation to the last and to one another, and securing them together in that relation. At a later and entirely distinct stage in the manufacture of the shoe, after the operation of the pulling over machine, the heel seat was lasted.

One important feature of this invention consists in improved means constructed and arranged for use in assembling a shoe.

Another important feature of the invention consists in improved lasting mechanism; and a further very important feature of this invention consists in a combination of shoe assembling means and lasting mechanism.

The machine herein shown and described, which is adapted like the assembling machine to operate upon parts of a shoe loosely arranged about a last, combines the operations of the assembling machine and a heel seat lasting machine. After positioning the parts of the shoe at the heel in proper position and while holding them in proper relation the machine effects the heel seat lasting operation. By the use of this machine the temporary securing of the parts of the upper in assembled relation is rendered unnecessary as the lasting is effected while the machine holds the parts in proper assembled

relation so that an important saving of time and expense is effected and a greatly improved quality of work is obtained by performing on this machine operations heretofore separately performed by different machines as distinct steps in the manufacture of the shoe.

Another important feature of the preferred embodiment of the invention consists in the combination with assembling or other apparatus in the use of which the upper is put under forward tension about the heel part of the shoe, of lasting mechanism which operates to last the heel portion of the shoe while such tension is maintained. In the illustrated embodiment of the invention the assembling operation is made to include also the step of forwardly pulling the upper to conform it, particularly its marginal portion, to the shape of the side faces of the last.

Another very important feature of this invention consists in automatically operating heel seat lasting mechanism, with or without heel seat tacking mechanism which is also operated automatically.

Novel features of this invention will be found in the construction and arrangement of the shoe supporting and pulling means, with its adaptations to the steps of assembling and adjusting the loosely applied parts of the shoe into proper relation and then straining the upper lengthwise of the last and holding it under tension about the rear portion of the last; in the provision for movement of the shoe so prepared backwardly into the heel embracing band of the lasting mechanism and the actuation of that band further to conform the upper materials to the contour of the heel portion of the last while the upper is so held under strain; in crimping or overwiping mechanism constructed and arranged to adapt itself to the shape of the last; in automatic operating mechanism by which overwiping mechanism is caused to act repeatedly on the same portion of the shoe; in provision for automatically changing the relative altitudes of the wipers and the shoe during the lasting operation; in the gang tacking mechanism by which the heel seat portion of the shoe is fastened; and in other combinations found in the illustrated embodiment of the

invention, as will appear from the following description and the accompanying drawings.

These and other features of the invention including certain combinations of parts and more important details of construction will now be described in connection with the drawings and then pointed out in the claims at the end of the description.

10 In the drawings illustrating one embodiment of my invention, Figure 1 is a side elevation; Fig. 2 is a vertical section of the head of the machine on a larger scale and in the plane of the driving shaft; Figs. 3, 4 and 5 are side elevations on a larger scale than Fig. 1 of the upper stretching mechanism in different positions; Fig. 6 is a section on line 6 of Fig. 4; Fig. 7 is a section on line 7 of Fig. 4; Fig. 8 is a perspective view of the heel seat lasting mechanism; Fig. 9 is a horizontal section showing the means for carrying the counter conforming band; Figs. 10, 11 and 12 are details concerned with the shoe support positioning and locking mechanism which is shown also in Figs. 1 and 2; Fig. 13 is a horizontal section on a higher plane than Fig. 9 showing the overworking and tacking devices for the heel seat; Fig. 14 is a perspective view partly in section of the tack supplying mechanism also shown in Figs. 1 and 2. Figs. 15 and 16 are sections of the tack distributing mechanism in different positions. Fig. 17 is a perspective view of the operating device for the tack distributor. Fig. 18 is a horizontal section in the same plane as Fig. 9 showing the clamps used instead of the heel band. Fig. 19 shows the side clamps and heel band used together. Fig. 20 is a perspective view of one of the clamps.

The machine comprises a base 2 upon the top of which is mounted the head carrying the heel seat lasting mechanism and to the side of which near the front is pivoted at 4 the shoe support or jack carrying the shoe assembling and upper pulling apparatus. The jack post 5 can swing outwardly to clear the last thereon from the machine for giving access to all sides of the shoe in applying the last to the heel pin 6 and assembling and adjusting the upper materials and the innersole in proper relation. The arm 8 carrying the upper pulling devices is mounted on the spindle 10 upon which it can be freely adjusted vertically by the pinion shaft 11, see Figs. 4 and 7, which is a sleeve with a toothed head embracing a serrated disk on a rod 12. A spring 13 maintains locking contact between the head and disk as shown in Fig. 7. The spindle 10 with the shoe and the pulling devices can turn about the axis of the spindle to present either side of the shoe to the operator in the assembling and adjusting operations and to permit right and left crooked lasts to be positioned ap-

propriately with relation to the lasting mechanism. The arm 8 trends upwardly from the spindle and in its forward portion has a horizontal guideway located directly below the last in which a block 15 is movable lengthwise of the shoe. This block comprises an overhanging arm 16 which rises from one side thereof as shown in the drawings to give opportunity for the shoe to be swung laterally thereunder into position for the upper to be gripped and pulled, and for the toe of the last to be swung laterally while the grippers hold the upper whereby the upper may, in effect, be adjusted longitudinally about the last and the tip line of the upper straightened or positioned at the desired angle across the last. The arm 16 has a rest 17 for engaging the bottom of the last or the innersole thereon, the toe end of the last being held up by a spring 18 acting upon the heel pin, and a rest 19 for engaging the end face of the last when the block has been adjusted to the right position in the arm 8 for the particular shoe in hand.

The block 15 supports pivotally at 20 the upper pulling device which comprises a gripper carrier 22 which is an angular member or lever on which one gripping jaw 23 is rigidly fastened while the other jaw 25 is pivoted thereon at 24. The pivot 20 also serves as the fulcrum for the gripper operating member 26 having the handle rod 28 and the guideway, formed by the roll 30 and the wall 32, for the tail of the jaw 25. A spring 33 in the operating member presses forwardly against the carrier 22 and rocks its heel 34 against a lug 35 located on the carrying block 15 below the pivot 20. This spring holds the jaws forwardly with relation to the operating member so that they will not retract relatively to the upper until they have closed and gripped it. The operating member carries a pawl 36, see Fig. 6, for engaging a curved ratchet face 38 formed on the block 15 to maintain the position of the operating member when it is not being moved. The pawl, which is a sliding bolt, has a pin 29 that extends into a notch in the handle rod 28 which is capable of being turned far enough to retract the pawl from the ratchet face when the operating member is to be moved upwardly as for relaxing the pulling strain on the upper. The arm 8 has ratchet teeth on its lower face which are adapted to be engaged by a pawl 39 on the block 15, see dotted lines in Figs. 3, 4 and 5, to lock the block and all the parts carried by it against forward movement on the arm and give stability to the fulcrum 20 while the upper is being pulled and held under tension. The pawl 39 is normally held away from its ratchet by the engagement of heel 34 with the arm 40 of the pawl and is permitted to be turned up, by its spring, against the ratchet on arm 8 only after the gripper

carrier with its heel 34 has been turned forwardly in pulling the upper as shown in Fig. 5. The arrangement of the spring 33 provides for holding the gripper carrier in a normal position determined by the engagement of its heel 34 with the lug 35 and with the jaws either open or closed depending upon the position in which the operating member 26 is held by its pawl 36. When the operator has applied the last to the heel pin with the upper materials and innersole loosely or otherwise placed thereon and positioned the slide 15 according to the length of the last with the rests 17 and 19 in the relation shown in Fig. 3 he will lift the handle rod 28 to open the jaws if they are closed. This movement forces shoulder 32 against the tail of jaw 25 to turn that jaw on its pivot 24 as will be clear from Fig. 5. The upper having been straightened out and properly positioned within the jaws the handle 28 will be depressed. The spring 33 holds the gripper carrier and its jaws from rearward rocking until they shall have gripped the stock and the roll 30 then engages the tail of jaw 25 for forcibly pressing it in the closing direction. In the continued downward movement of the handle rod the roll is pressed against the tail piece and acts therethrough to draw the grippers backwardly about fulcrum 20 to stretch the upper as will be understood by comparing Figs. 4 and 5. It is to be noted that the pulling movement of the grippers takes place about the pivot 20, the points of the jaws being raised as they pull so that the upper is bent about the end of jaw 25 to increase the holding power of the jaws with the increase in tension applied. Preferably the upper is not bent upwardly over the toe end of the last in a way to interfere with tightening the marginal edge of the upper throughout the length of the vamp and the grippers therefore hold the upper materials including the heel stiffener conformed to the contour of the heel of the last for the heel seat lasting operation.

The rests 17 and 19 constitute convenient means for positioning or adjusting the innersole lengthwise on the last bottom if the innersole is unattached to the last as it is in the manufacture of many shoes. When the innersole is to be positioned with relation to the heel end face of the last the block 15 may be initially positioned to have a slight backward movement before the stop 19 meets the end of the last and in this movement the innersole will be caused by the roughened rest 17 to slide heelward until it meets the heel stiffener or upper material. Then when the upper is pulled toward the heel end of the innersole will be pushed forwardly until it is flush with the rear face of the last. These movements are slight and not enough to cause any objectionable

bowing of the innersole but rather tend to cause the innersole to lay down snugly into the shank of the last as it should do to facilitate the heel seat lasting operation. If the innersole is to be positioned with relation to the toe end of the last the stop 19 may first be positioned against the toe of the last as in Fig. 4 and the innersole then abutted against the stop, the toe of the last being tipped downwardly enough to relieve contact of the rest 17 with the innersole during the adjustment of the latter.

The jack includes a spring 3 which as shown in Fig. 1 is strong enough to uphold the spindle 10 with the shoe thereon and when the upper has been satisfactorily pulled toward and fitted to the last the jack post is swung inwardly, within the heel band and against a suitable back stop 69 the shoe being depressed to permit it to go under the heel bottom rest which will be described. The lower end of the spindle is formed as a rack which engages a pinion on the shaft 4 upon which the jack post is pivoted. This shaft also has a rigidly attached ratchet wheel 41 as shown in Figs. 1 and 11 which is engaged by a pawl on the lower end of a rod 42 to turn the shaft and its pinion in the direction for uplifting the spindle from the power shaft during the operation of the machine for a purpose which will be described. A similarly constructed but horizontally arranged rack bar, pinion, ratchet wheel and pawl connection shown in Fig. 12 is provided between the jack post and a rod 43 for inswinging the jack and the shoe from the power shaft, and these rods, which with their associated parts are shown in Figs. 12 and 13 on a larger scale than in Fig. 1, are connected to bell-cranks 44 mounted on a fixed pivot rod as shown in Fig. 10. The outer ends of the cranks 44 rest upon springs 45 in the outer arm of a bell-crank 46 the upper arm of which is a segment which, through suitable connections later described, receives motion from the power shaft. This movement upwardly for the rods is transmitted yieldingly by the separate spring 45 and turns the ratchets in the direction to uplift the spindle and shoe and to pull them backwardly into the machine. Reverse movement is transmitted to the rods unyieldingly through contacting faces of the upper arms of the bell cranks as may be seen from Fig. 10 and forces the tails of the pawls into contact with the stops 47 which swing the noses of the pawls away from their ratchets leaving the latter free to turn. This is the condition which exists between the end of one cycle of the machine's operation and the beginning of another cycle and prevails while the workman is removing one shoe and applying and pulling another shoe.

The illustrated heel lasting mechanism 130

into which the shoe is thrust backwardly after the upper has been pulled and adjusted includes a plurality of separately movable parallel cords, bands, or the like 50 arranged to extend about the heel portion of the shoe from the shank on one side to the shank on the other. The end portions of the cords are bent outwardly over the swiveled heads 51 of blocks 52, pivoted upon the front arms of angle levers 54, and are attached to separate springs 55 which are independently adjustable by threaded anchors 56. A lining 58 of leather, rubber, felt or other suitable material is arranged within the bands 50 and distributes the pressure of the bands without interfering with their relative conforming movement to adapt them to the contour of each last when they are put under tension by the actuation of the levers 54. This is effected through the connecting rods 59 and equalizer 60, see Fig. 9, the latter being mounted on a toothed slide 61 which is engaged by a pinion, see Fig. 2, which is turned by a toothed angle lever 62, see Fig. 2, fulcrumed at 63 and having a roll in engagement with the rear cam face 64 of the cam block 65. This cam block is carried by the cam shaft 66 which is driven through a clutch and connections to the lower pulley shaft 68 which driving parts are or may be substantially like those shown and claimed in United States Letters Patent, 791,686, of June 6, 1905. This clutch mechanism need not be here further described than to state that it is actuated by a treadle X^{34} to cause the machine to be started and that the cam disk X^{31} has suitably formed and located rises to cause the machine automatically to come to rest at predetermined times which will be later noted. The backward movement of the slide 61 effected by the rise in the cam face 64 turns the angle levers 54, swings their front ends inwardly and, through the blocks 52, forces the bands and their lining toward the sides of the last. This inward movement of the levers 54 extends the bands 50, anchored to the screw bolts 56, putting the springs 55 under tension and causing those springs to exert an endwise pull on the bands for drawing forwardly upon the counter and upper as they are conformed to the sides of the last. The block 52 is pivoted to the lever 54 at 53 and a spring 57 maintains the block in a normal position. The location of the pivot 53 back of the head of the block causes that block to be projected forwardly as lever 54 closes toward the shoe. The slide 61, actuated from the cam face 64, is toothed on its lower face as shown in Fig. 2 to engage the upper arm of the angle lever 46 before described by which the shoe is lifted and pulled back into the machine and is locked there to receive the heel seat lasting operation. Any other mechanism suitable for clamping the heel portion

of the upper materials to the last may be used instead of that above described. A back stop 69 is adjustably mounted in position to limit the backward movement of the shoe into the elastic heel band which is effected by the connection to the jack post through the rod 43. This insures a predetermined positioning of the shoe lengthwise with relation to the operating parts of the machine. The back stop is forked to center the shoe laterally independently of the band and thus assist in positioning the shoe laterally with relation to the lasting and tacking mechanism. In Fig. 18 the back stop is shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 having marked on it graduations indicating the proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes. In this figure and also in Fig. 19, the back stop is shown as provided with a swiveled head 692 on which in turn are swiveled two contact blocks 693. A detail of this device is shown in Fig. 20. In Figs. 18 and 19 there are also provided side clamps on arms 694 actuated by springs 695 on rods guided in the swinging arms 54, 55 above described, to clamp the upper against the sides of the heel as shown. The contact members of these side clamps are like those located at the end of the heel and the front member at each side is located to press the end portion of the counter against the side of the last. These side clamps may be used in place of the heel embracing band 50, as illustrated in Fig. 18, or in addition to the band, as shown in Fig. 19, or they may be omitted altogether, as in Fig. 9, according to the nature of the shoes being assembled and heel seat lasted. If the shoes are of stiff material, the clamps will be useful in securing a good conformation of the heel stiffener to the contour of the last and if fine shoes are being lasted which have stiff counters, the band will be employed to distribute the pressure of the clamps and avoid any danger of marring the stock. For light shoes the band alone will probably be sufficient.

The devices for breaking down the counter and upper over the edge and upon the bottom of the heel seat are shown best in Fig. 13 in connection with Fig. 2 and comprise the wiper plates 70, 70, 72 and the links 71, 71 arranged to embrace the entire heel end portion of the shoe and to wipe inwardly and forwardly over the heel as they are closed from the position shown in Fig. 13. These devices receive their movements from the cam block 65, before mentioned and shown in Fig. 2, which has a cam path 75 in which stands a roll 76 on a slide 78 that is connected by an equalizer 80 with 130

rs 82, see Fig. 13, and also carries the rigid forwardly projecting arm 83. This arm 83 has a yielding connection with the wiper plate 72 provided by the following arrangement: The arm 83 has a beveled end which abuts against a similar face on a displaceable member 84 that is pivoted to slide 85 and by which the wiper 72 is actuated through the stud 840 and sub-slide 850. The member 84 has a beveled upper face at 86 upon which rests a beveled plunger 87 carried in the slide 85 and pressed upon by a heavy spring 88, see Figs. 2 and 13. The spring plunger maintains the members 83, 84 normally in the relation shown in Fig. 13, but permits the member 84 to turn and the movement of the wiper 72 to cease when resistance to such movement overbalances the tension of the spring 88. Normally however the wiper will overcome any resistance offered by the work and complete its stroke into predetermined position over the last bottom to wipe the upper into position to be tacked. The tacking is effected by mechanisms to be more fully described and each of which includes a tack block 120 carried by the slide 85 and having a depending lip or stop 122 to meet the side of the last, or the heel band that embraces the last, and position the tack blocks for tacks to be inserted at a definite distance from the edge of the shoe bottom. When this stop 122 arrests the movement of the slide 85 the beveled faces of members 83, 84 wedge sidewise against the influence of spring 88. The member 84 has a cam slot 842 into which the stud 840 of the sub-slide or wiper slide 850 projects and when member 84 is wedged sidewise as described the cam slot 842 acts on the stud 840 to retract the wiper slide and wiper slightly with relation to the shoe and with relation to the tack block so as to permit the tacks to be driven into a portion of the upper which has been wiped in and pressed down by the wipers to smooth and prepare it for the reception of the tacks. The machine thus automatically follows in this respect the well known and advantageous procedure of the operator of manually actuated bed lasting machines who "backs up" his wipers preparatory to tacking the heel seat. The members 83, 84 have cooperating lugs 89 by which member 84 is returned to its initial position when member 83 is retracted.

The bars 82 connected with the equalizer 80, see Fig. 13, have toothed engagement with angle levers 90 which in turn have toothed connection through pinions 91 with rack bars 93. Each rack bar 93 is connected with a slide 95 corresponding to the slide 85 of the heel wiper actuating mechanism which actuates the side wiper plates 70 by the same arrangement, including parts 84, 840, 842, 86, 87, 88, 89 and 950, that connects

the bar 83 to the wiper plate 72. These parts are illustrated in Fig. 8 as well as in Fig. 13. The wiper plates 70 have an endwise sliding connection with the slides 950. The links 71 are pressed against by rolls 97 on plungers 96 which are guided for movement in a direction substantially perpendicular to the corners of the heel of the last being operated upon, or the curved portions connecting the back end of the heel and the sides of the heel. The plungers 96 are pressed forwardly by stiff springs 98 to hold the links up to their work of breaking down the upper and counter as the wipers and links are advanced and closed in over the heel seat.

The construction and arrangement of the parts just described provides that movement will be transmitted from the cam path 75 to the wiper plate 72 and through that plate and the links 71 to the wiper plates 70 to advance the wipers. This carries the wiper 72 over the heel seat of the shoe and moves the wipers 70 endwise in blocks 950 and the links forwardly with relation to the plungers 96. Simultaneously with this forward movement motion is transmitted through the angle levers 90 and the described, independently yielding, connections to close the side wipers and the corner wipers or links 71 inwardly over the heel seat, thus gathering the upper inwardly in substantially radial lines over the heel seat. The provision for effecting the forward movement and the inward movement from each side of the shoe through independently yielding connections permits the wiping or breaking down means to adapt or conform itself to the contour of each shoe and this is facilitated by the flexible connection 71 between the plates 70, 72, which act at the ends and back of the heel seat. The independently yielding connections also facilitate the adaptation of the wipers to the shape and position of right and left shoes which differ greatly when made on crooked lasts. This however is largely provided for by arranging the jack so that the shoe can swing laterally about the axis of the spindle 10 to center both right and left shoes in the lasting devices.

The cam path 75 is formed, see dotted lines representing the back of the cam block in Fig. 2, to give a slow inward actuation of the breaking down means and then, see the full lines on the front side of the cam block, to retract these means and advance them a second time in the same cycle of the machine's operation. It is intended that the first or essentially breaking down advance shall take place with the shoe in a lower position than the second or wiping in and ironing down movement. Accordingly, means for controlling the vertical position of the shoe is provided and is con-

5 nected with means for changing that vertical position automatically between the two actuations of the upper overworking means. The shoe bottom rest 100 is formed as shown in Fig. 8 to contact with the shoe bottom at a plurality of points including points at opposite sides of the innersole near the heel breast line to position the shoe as to transverse inclination of the heel bottom and to
 10 clamp the insole down firmly upon the last bottom near its opposite edges. This bottom rest is movable endwise in a guideway formed in the lower face of a block 102 and is pressed forwardly therein by a spring 103 against an adjusting screw 104. The block
 15 102 is guided for vertical movement in the machine head and has rack teeth engaged by a pinion 105 coupled by a rack rod 107 to a lever 108 which is fulcrumed at its upper end and is held by a spring, 109, acting on the rack rod, against a cam face 110
 20 formed on the front end of the cam block 85. This cam face is formed with relation to the cam track 75 for the bottom rest to be raised between the first and the second advance of the wipers so that the shoe may come up to the level of the wipers before their second advance, whereby the upper is caused to be firmly wiped or ironed down
 25 upon the last bottom to form a firm, smoothly lasted heel seat. The lifting of the shoe is effected by the strong spring 45 located in the jack lifting mechanism which is put under tension when the jack is locked up. The cam face 110 is also formed to depress the bottom rest again after the tacks are driven, as will be described, and before the wipers are finally retracted. This is to depress the shoe from the wipers and to
 30 relieve the pressure of the wipers and prevent them from dragging over the lasted and tacked upper in their final retraction. It will be remembered that the wipers are partially retracted before the tacks are
 35 driven so that the tacks may be inserted through a portion of the upper that has been smoothed and compacted by the wipers as is customary in the use of hand operated lasting machines.
 40 The slides 85, 95 and 96 support the tack blocks 120 of which there are five mounted in said slides as shown in Figs. 8 and 13 to have a small amount of angular movement in a horizontal plane. These blocks have
 45 projections extending downwardly through slots in the wipers and carrying feelers or gages 122 arranged to engage the side of the shoe, or the counter, clamping bands and thereby limit the inward movement of the
 50 tackers and also determine the position with relation to the edge of the shoe at which the tacks shall be inserted. The gages also effect the necessary turning of the tack blocks in their slides to position at substantially
 55 the same distance from the edge each of the

two tacks which the blocks are arranged to carry. The tack pockets in the blocks 120 are inclined so as to drive the tacks toward the center of the heel and the drivers 124 are similarly inclined. This arrangement provides that the ingoing tacks which are simultaneously driven all the way around the heel seat shall by reason of their inclination draw the upper inwardly from the edge of the last. These tacks are driven in front of the wipers into a portion of the upper materials which therefore is not held down in lasted position and the indrawing effected by the inclined tacks is therefore particularly advantageous because it takes up or reduces the slack that otherwise would be liable to exist between the line of tacks and the edge of the wipers. A single driver rod 125 carries two drivers 124 and the turning movement of the tack block takes place about the axis of that rod which is connected by a slide block 123 and a ball joint to the driver plate 126 guided to move in rigid lines by the post 127. The driver plate is the broadened front end of a lever fulcrumed at 128 upon a link 129 and having a depending hinged link 130 the foot of which rests upon a cam 132 on the front end of the cam shaft 66. This cam serves to lift the driver lever and the drivers against the tension of springs 134 suspended by rods 133 from the lever to be compressed against a shelf 135 on the frame preparatory to actuating the driver lever downwardly to insert the tacks when the cam permits said springs to close. Adjustable stops 136 on the frame limit the down stroke of the drivers and determine the extent to which the tacks shall be driven.

A forked slide block 140, see Fig. 2, resting on the machine frame is adapted to be advanced by a T lever, pivoted at 143 and having a handle arm 145, into a position under shoulders 146 on the lever-raising link 130 and prevent the descent of the lever for driving the tacks until the operator has had opportunity to examine the shoe after the second inwiping of the lasting devices. The slide block may then be retracted to permit the driving of the tacks, or if the shoe is not properly lasted and must be submitted to a second cycle of the machine's operation the block may be left until a suitable time in the next cycle when it will be automatically retracted by the engagement of a wedge 148 which is shown as carried by the rotating tack hopper 150 with the upper arm 147 of the lever. The tacks are fed by mechanism later to be described from the hopper 150 which is oscillated by a rack bar 152 through a spring 154 from a cam track 155 in the side of the cam X²¹ on the cam shaft 66. These parts do not in themselves form a part of this invention and may be of previously known construction.

The hopper has a stud 156 between which and the wedge 148 the arm 147 is set when the slide block 140 is advanced to obstruct the descent of the drivers. This stud prevents the oscillation of the hopper through a great enough angle to effect the separation and feeding of a second set of tacks until the set which is waiting to be driven has been inserted and if the cycle of the machine is completed without driving the waiting set then the feeding mechanism is rendered ineffective for that cycle but the wedge 148 forces the tack stopping devices to normal position in time to permit delivery of tacks for the next cycle. The block 140 and the arm 147 constitute connected means for controlling the feeding and the driving of the tacks. By the use of these devices the machine can be made to repeat its cycle as many times as may be required with the tacking mechanism each time ineffective and thus a particularly stubborn shoe be lasted in by successive operations of the wipers and finally tacked when it is in satisfactory condition.

The tacks which gravitate down the raceway grooves, Fig. 14, from the hopper are separated by a slide 160 with which moves a notched gate 162 and are delivered through the oblique slots and eyes in said plate as described in United States Letters Patent No. 1,002,421, granted on my application Sept. 5, 1911. There are five raceways and the separating mechanism is arranged to be reciprocated twice in each cycle of the machine to deliver ten tacks, which is the number the machine is designed to drive at one time. To this end a receiving plate 164 is provided which is guided for endwise movement between the conductor or tack tube anchor plate 165 and a cap plate 166. The receiving plate has ten pockets arranged in two series alternating and so positioned that when the first series is in receiving position the points of the tacks will rest upon the anchor plate and will not be discharged into the tack tubes until the receiving plate has been moved to put the second series of pockets in receiving position in time to take the tacks from the second actuation of the separating devices. At this time the first set of tacks will be discharged into the tubes and the second set will fall directly through the receiving plate into the tubes as shown in Fig. 16 so that the two sets of tacks fall into the tubes which lead them to their pockets under the devices, Fig. 2, at nearly the same time. This concentrates the tack delivering period and leaves the remainder of the time occupied by the cycle of the machine for other operations. One series of tack pockets is arranged oblique to the other so that the extent of movement of the receiving plate to position all its pockets in alignment with the tubes in the conductor plate

and discharge the tacks may be different from the spacing between the tubes in the conductor plate. A different number of tacks may be fed in any multiple of the number of the raceway grooves. For actuating the separating devices to take from the raceways two charges of tacks in each cycle the pinion 168 which formerly directly reciprocated the separating devices meshes with a pinion 170 of half the number of teeth which has a crank connected to the block 172 in the depending fork of the separator driving bar 174 and from which that bar and the separating devices receive a complete reciprocation from the oscillatory movement of the pinion 168 and the hopper in one direction and a second complete reciprocation from the oscillatory movement in the other direction. The crank block has a stud 175 arranged to contact at times with an arm 176 on a shaft 178 that has a tooth 179 having a yielding connection with the delivery plate by means of spring plungers 180 as shown in Fig. 17. This arrangement is such that as the stud 175 turns downwardly and to the left in Fig. 17 it leaves the arm 176 and the delivery slide 164 at rest in what may be considered to be the discharging portion of the slide until the stud nearly completes its rotary stroke when it will reach a position to contact with the upper side of the arm 176 and move the delivery slide into its first receiving position shown in Fig. 15, in time to take the first set of tacks discharged from the oblique slots and eyes of the separating plate 160. On the reverse oscillation of the pinion 168 and the hopper the stud will leave the arm 176 again and not contact with it until it approaches the Fig. 17 position whereupon it will turn the arm and move the delivery slide to the left in the figures to discharge the first set of tacks into the tubes Fig. 16 and receive the second set from the separator plate, as shown in Fig. 16.

An indicator is often used with machines of this type for the purpose of recording the amount of work done and in Figs. 1 and 2 an indicator 180 which may be of any usual form is shown as built into the machine head so that it cannot be tampered with. The actuating lever 182 of the indicator is connected by a plunger 184 with an eccentric portion of the shaft 185 of the hopper which, it will be recalled, is locked by the arm 147 to prevent it from being actuated whenever the machine is caused to repeat its operations on a shoe. By this arrangement the indicator is caused to record the number of shoes operated upon as distinguished from the number of cycles through which it is caused to run.

In the use of the machine the work may be prepared by applying the upper, linings and heel stiffener loosely to the last and the

inner sole will be placed loosely upon the last bottom in a McKay shoe, as is usual, while in making welt shoes the usual practice of tacking the innersole to the last bottom may be followed if preferred. The shoe will then be applied to the heel pin of the jack, the latter being tipped forward on its pivot 4. The toe of the shoe may then be swung under the rest 17 and the upper will be inserted in the grippers 24, 25 and pulled and the several parts of the upper materials be adjusted into proper assembled position on the last substantially as described in United States Letters Patent 855,831, for method of making shoes. When the parts of the shoe are in correct assembled relation with one another and with the general lines of the last, and the upper strained forwardly to conform it snugly to the heel portion of the last with its marginal edges held under tension, the jack will be tipped backwardly into the heel lasting mechanism. The treadle X⁵⁴ is then depressed for starting the machine which runs through a portion of its cycle determined by the formation of the cam X⁵¹ and then stops automatically. As herein shown the cycle is divided into three steps and the machine comes to rest after the locking of the jack and the tightening of the heel bands and again between the second closing of the overworking wipers and the insertion of the tacks to permit the operator to inspect the work and, by hand operations, make any adjustments that may be required for securing a satisfactorily lasted heel seat. The second stop may be omitted or this stop, and also the first stop, may be optional with the operator if desired. This would permit speeding of the machine by a skilful operator and upon cheap work wherein nicety of adjustment is not required. The clutch mechanism to which reference is made is arranged to bring the machine always to a stop at the predetermined points but it may be modified so that if the workman retains his foot on the treadle the machine will skip the intermediate stops and continue running to the end of its cycle; and further the cam X⁵¹ may be changed to add a stop either necessary or optional between the first and the second wiping. The raising of the bottom rest and the lifting of the shoe following it by the expansion of the yielding element in the jack lifting mechanism takes place automatically between the two overworking operations of the wipers. This lifting of the shoe may be made more radical by adding to the formation of the cam face 64 in an obvious way to cause the bell crank lever 46 to be rocked before or during the second advance of the wipers and force the shoe upwardly. This change in the cam will also effect a supplemental tightening of the heel

band after the breaking down of the upper caused by the first closing of the wipers and this is desirable in lasting stubborn upper materials. If the shoe is a difficult one to last the operator may suspend the driving of the tacks that are in the tack block and the delivery of a second set of tacks by shifting the hand lever 145 to set the block 140 and the stop 147. The operator will then watch the wiping over operation and if it is satisfactorily done he will withdraw the block and stop and permit the upper to be fastened by the tacks. If it is unsatisfactory the shoe will be subjected to another cycle of the machine's operation and the block and stop will be withdrawn at the proper time to permit the upper to be secured and a set of tacks fed into place to be driven into the next shoe.

Those novel features of this invention which relate only to the tacking mechanism are not claimed herein but constitute the subject-matter of a divisional application Serial No. 621,514, filed April 17, 1911.

Having explained the nature of this invention and described a construction embodying the same in the best form now known to me, I claim as new and desire to secure by Letters Patent of the United States:—

1. A machine of the class described, having in combination, a last spindle, a gripper support extended therefrom, and a gripper mounted on the support in position to pull an upper applied to a last on the spindle, said machine having means for fixing the gripper in different positions of adjustment both vertically and horizontally relatively to the last spindle for lasts of different heights and lengths.

2. A machine of the class described, having in combination, a last spindle, a gripper support extended therefrom and adjustable vertically thereon, a gripper mounted on the support, and means for fixing the gripper upon the support in different adjusted positions.

3. A machine of the class described, having in combination, a last spindle, a gripper support extended from the spindle, a gripper adapted to be fixed in different adjusted positions thereon lengthwise of the shoe, and means for actuating the gripper in its adjusted positions to pull the upper forward on the last.

4. A machine of the class described having, in combination, shoe resting means including an abutment for the toe end of the last, a gripper arranged to engage the forepart of the upper and mounted for movement longitudinally of the last away therefrom to pull the upper lengthwise, and means for actuating the gripper.

5. A machine of the class described having

ing, in combination, shoe resting means including abutments for the bottom and for the toe end of the last, a gripper arranged to engage the toe portion of the upper, and means for actuating the gripper forwardly and upwardly with relation to the last for pulling the upper lengthwise.

6. A machine of the class described, having in combination, a last spindle, a support extended therefrom, and an upper pulling device mounted on the support including an abutment for the last and jaws for pulling the upper forward.

7. A machine of the class described, having in combination, a last spindle, a support extended therefrom, a block mounted in the support and having an abutment for the toe end of the last, and upper pulling jaws fulcrumed in the block and arranged to pull the upper forward on the last.

8. A machine of the class described, having in combination, a last spindle, a support extended therefrom, a block mounted in the support and having an abutment for the toe end of the last, an abutment for the bottom face of the last, and gripper jaws fulcrumed in the block to pull the upper forwardly and upwardly.

9. A machine of the class described, having in combination upper pulling means comprising a rest for the toe end face of the last, a rest for the bottom face of the forepart of the last, jaws for gripping the upper, and means for moving the jaws to pull the upper forward on the last.

10. A machine of the class described, having in combination, a last support, and upper pulling means comprising an abutment for the toe end face of the last, a pivoted gripper for pulling the upper lengthwise of the last with relation to said abutment, and manually operated means for actuating the gripper.

11. A machine of the class described, having in combination, a last support, a block including an abutment for the last, grippers pivoted on the block, and a lever for closing the grippers and swinging them about their pivot to pull the upper forward.

12. A machine of the class described, having in combination, a last support, a block, grippers pivoted to the block below the last, and means for closing the grippers and rocking them about their pivot to pull the upper toward and upward.

13. A machine of the class described, having in combination, a last support, a block, a gripper jaw pivoted to the block, a second jaw pivoted to the first, and an operating device arranged to engage the second jaw to close the jaws on the work and then rock them about the pivotal connection of the first jaw with the block.

14. A machine of the class described, hav-

ing in combination, gripper jaws arranged to pull an upper, and an operating device therefor having a handle capable of independent rotation, and means controlled by said rotation for locking and unlocking the operating device.

15. A machine of the class described having, in combination, means for supporting a last in inverted position, grippers arranged to engage the toe portion of the upper, a support located below the grippers and below the last bottom and about which the grippers can have pivotal movement for pulling the upper, and means for actuating the grippers angularly about said pivot to pull the upper, the arrangement being such that the upper is bent to increase its frictional engagement with the end of the lower jaw of the grippers as the pulling movement proceeds.

16. A machine of the class described, having in combination, the shoe support 10, the gripper support 8 thereon, and the adjustable connections comprising a rack on the support 10, the toothed sleeve 11 having a hand wheel, the rod 12 having a locking head, and the spring 13 to press the hand wheel and the locking head together.

17. A machine of the class described, having in combination, the shoe support 10, the gripper support 8 thereon, the block 15 movable in the support 8, the pawl 39 for locking the block, the gripping means movable upon the block after it has been locked, and the pawl 36 for locking the gripping means.

18. In a machine of the class described, means for positioning an inverted last, a gripper arranged adjacent to the toe of the last and pivotally supported at a point below the last, and means for actuating the gripper about said pivot to pull the upper forwardly and upwardly.

19. In a machine of the class described, means for positioning an inverted last, a gripper arranged adjacent to the toe of the last, and comprising an angle lever pivoted at the lower end of the upright arm and having one of the gripping jaws on the horizontal arm, a cooperating jaw, and means for actuating the gripper about the pivotal connection of said upright arm.

20. In a machine of the class described, means for positioning an inverted last, a gripper arranged adjacent to the toe of the last, and comprising an angle lever pivoted at the lower end of the upright arm and having one of the gripping jaws on the horizontal arm, a cooperating jaw, and means acting through said cooperating jaw to close it upon the work and then move the lever about said pivotal support for the upright arm to pull the upper.

21. A machine of the class described, having in combination, means for gripping an

upper at the toe, pulling it forwardly and holding it under lengthwise tension without bending it over the toe end of the last, and means for lasting the heel seat of the shoe while the upper is thus held.

22. A shoe making machine, having in combination, means for engaging an upper, operating means for relatively moving said engaging means and the last lengthwise of the upper in the direction for straining the upper forwardly on the last, and automatically operating means for lasting the heel seat portion of the shoe.

23. A shoe making machine, having in combination, means for engaging an upper, operating means for relatively moving said engaging means and the last lengthwise of the upper in the direction for straining the upper forwardly on the last, automatically operating means for lasting the heel seat portion of the shoe, and automatically operating means for tacking the upper.

24. A shoe making machine, having in combination, means for straining an upper forwardly on a last, and means operated automatically a plurality of times over the same portion of the heel seat to wipe the upper into lasted position over the heel seat of the last.

25. A shoe making machine, having in combination, manually operated means for engaging an upper, operating means for relatively moving said engaging means and the last lengthwise of the upper in the direction for straining the upper forwardly on the last, and automatically operated means for lasting the entire heel seat portion of the shoe while the upper is held under strain.

26. A shoemaking machine having, in combination, means movable forwardly relatively to the last for straining the upper toward the toe end of the last, and mechanism operating automatically while such forward strain is maintained for lasting the heel seat portion of the shoe.

27. A shoemaking machine having, in combination, means for engaging an upper, operating means for relatively moving said engaging means and the last lengthwise of the upper in the direction for straining the upper forwardly on the last, and means for fastening the upper to the innersole on both sides of the rear part of the shoe while the forward strain is maintained.

28. A shoemaking machine having, in combination, means for straining an upper forwardly on a last, and means operating automatically to lay the upper inwardly over the last bottom on opposite sides of the rear part of a shoe and to fasten the upper on both sides while the forward strain on the upper is maintained.

29. A shoe making machine having in combination, lasting means comprising

wiper plates constructed and arranged to fold in the upper about the entire end portion of a last simultaneously, means for actuating said plates to do their work, and means arranged to be automatically set in motion to fasten the upper after a predetermined number of actuations of the wiper plates.

30. A shoe making machine having in combination, lasting means comprising wiper plates constructed and arranged to fold in the upper about the entire end portion of a last simultaneously, means for actuating said plates to break the upper materials over the edge of the last, and then relatively actuate the plates and the last to press the upper down upon the last bottom, and operatively connected means for inserting fastenings to secure the upper while it is held by the wipers.

31. A shoe making machine having in combination, lasting means comprising wiper plates constructed and arranged to fold in the upper about the entire end portion of a last simultaneously, means for inserting a plurality of fastenings simultaneously to fasten the upper about the end portion of the last, and power driven means to actuate the wipers a predetermined plurality of times and then automatically start the inserting mechanism.

32. A shoe making machine, having in combination, means for gripping an upper at the toe end and pulling it to put and hold the marginal edge of the upper under lengthwise tension about the heel end of the last, means for actuating the gripper, and means for lasting the heel seat of the shoe while the upper is so held.

33. A shoe making machine, having in combination, wipers, a gripper, means for actuating the gripper to strain the upper lengthwise of the last and hold the upper with its marginal portion under tension about the heel end of the last, and means for actuating the wipers to last the heel seat end of the shoe while the upper is so held.

34. A shoe making machine, having in combination, means for engaging an upper, operating means for relatively moving said engaging means and the last lengthwise of the upper in the direction for straining forwardly the upper placed loosely on the last and holding the upper under lengthwise tension, means for lasting the heel seat, and means for fastening the heel seat portion of the upper in lasted position.

35. A shoe making machine, having in combination, means for engaging an upper, operating means for relatively moving said engaging means and the last lengthwise of the upper in the direction for straining the upper forwardly about the heel end of the last and holding it under tension, means for working the marginal portions of the upper

materials over the heel seat of the last, and means for fastening said overworked portions of the upper.

36. A shoe making machine, having in combination: means for straining an upper forwardly about the heel end of a last and holding it under tension, a heel embracing band to clamp the upper about the heel of the last, and automatically operating means for working the marginal portions of the upper materials over the heel seat of the last.

37. A shoe making machine, having in combination, means for straining an upper forwardly about the heel end of a last and holding it under tension, automatically operating means for working the marginal portions of the upper materials over the heel seat of the last, and means for fastening said overworked portions of the upper.

38. A shoe making machine, having in combination, means for straining an upper forwardly about the heel end of a last and holding it under tension, automatically operating means for working the marginal portions of the upper materials over the heel seat of the last, and automatic means for inserting a plurality of fastenings simultaneously to secure said overworked portions of the upper.

39. A shoe making machine, having in combination, means for straining an upper forwardly about the heel end of a last and holding it under tension, automatically operating means for forcing the marginal portions of the upper materials over upon the heel seat portion of the last, and power operated mechanism for relatively moving the last and said last mentioned means in a direction for thereafter firmly pressing said material into lasted position.

40. A shoe making machine, having in combination, means for straining an upper forwardly about the heel end of a last and holding it under tension, means for forcing the marginal portions of the upper materials over upon the heel seat portion of the last and for thereafter firmly pressing said material into lasted position, and power-driven means for fastening the upper.

41. A shoe making machine, having in combination, means for pulling an upper forwardly on a last, and means arranged for operating a plurality of times automatically to wipe the upper into lasted position over the heel seat portion of the last.

42. A shoe making machine, having in combination, means for pulling an upper forwardly on a last, means arranged for operating a plurality of times automatically to wipe the upper into lasted position over the heel seat portion of the last, and means for fastening the upper.

43. A shoe making machine, having in combination, means for pulling an upper forwardly on a last, means arranged for op-

erating a plurality of times automatically to wipe the upper into lasted position over the heel seat portion of the last, means for fastening the upper, and means for changing the relative planes of the wiping means and the shoe bottom during said wiping operations.

44. A shoe making machine having, in combination, means for pulling an upper forwardly on a last and holding it under strain out of contact with the corner formed by the bottom and end face of the toe of the last, means for clamping the upper about the heel portion of the last, and means for wiping the upper into lasted position over the heel seat of the last.

45. A shoe making machine, having in combination, means for pulling an upper forwardly on a last, means for clamping an upper about the heel portion of the last, means for wiping the upper into lasted position over the heel seat portion of the last, and means for tacking the upper.

46. A shoe making machine, having in combination, means for pulling an upper forwardly on a last, a heel embracing band, means for actuating said band forwardly and inwardly for tightening and conforming the upper materials to the last, and means for working the upper materials over upon the heel seat of the last.

47. A shoe making machine, having in combination, means for pulling an upper forwardly on a last, a heel embracing band, means for actuating said band forwardly and inwardly for tightening and conforming the upper materials to the last, and means automatically operated to wipe the upper materials repeatedly over the heel seat of the last while the last is embraced by the band.

48. A shoe making machine, having in combination, end lasting wipers constructed and arranged to wipe the entire upper over the sides and end of the heel, of the shoe simultaneously and power-driven means for repeatedly actuating said wipers.

49. A shoe making machine, having in combination, end lasting wipers constructed and arranged to wipe the entire upper over the sides and end of the heel of a shoe simultaneously, and power-driven means for repeatedly actuating said wipers, said machine having provision for changing relatively the plane of action of the wipers and the position of the shoe between successive actuations of the wipers.

50. In an end lasting machine, the combination with suitably shaped and arranged wipers and supports therefor, of means for actuating the supports substantially perpendicularly to the adjacent surfaces of the last, and sliding connections to permit the side wipers to slide through their supports lengthwise of the shoe.

51. In an end lasting machine, the combination with suitably shaped and arranged wipers, of supports for the side portions of the wipers, endwise sliding connections between said supports and the wipers, and means for actuating said supports perpendicularly to the side face of the last.

52. An end lasting machine, having in combination an end wiper and two side wipers, means for actuating the end wipers lengthwise of the shoe, connections therefrom for similarly actuating the side wipers, and means for actuating the side wipers transversely of the last having provision for permitting said lengthwise movement thereof.

53. An end lasting machine, having in combination an end wiper and two side wipers, means for actuating the end wiper lengthwise of the shoe, connections therefrom for similarly actuating the side wipers, and independently yielding means for actuating the side wipers transversely of the last.

54. An end lasting machine, having in combination, end embracing wipers, means for actuating the wipers lengthwise of the last, and independently yielding means for actuating the wipers transversely of the last.

55. An end lasting machine, having in combination, the end wiper and the two side wipers connected therewith by links.

56. An end lasting machine, having in combination, the end wiper 72, the side wipers 70, and the links 71 constructed and arranged to wipe the upper over at the corners of the last between the end and side wipers.

57. A shoe making machine, having in combination, means for supporting a shoe, heel lasting means, and automatic means for actuating the lasting means a predetermined plural number of times over the same portion of the shoe bottom to work the upper over the heel seat of the last.

58. A shoe making machine, having in combination, means for supporting a shoe, heel lasting means, automatic means for actuating the lasting means a predetermined plural number of times to work the upper over the heel seat of the last, and means for changing the relative planes of the lasting means and the shoe bottom during the said actuation.

59. A shoe making machine, having in combination, means for supporting a shoe, heel lasting means, automatic means for actuating the lasting means a predetermined plural number of times to work the upper over the heel seat of the last, and means for automatically changing the relative planes of the shoe bottom and the lasting means during said actuation.

60. A shoe making machine, having in

combination, means for supporting a shoe, heel lasting means, automatic means for reciprocating the lasting means a plurality of times over the shoe bottom to work the upper into lasted position, and means for automatically moving the wipers and the last bottom relatively closer together between reciprocatory movements to condense the stock against the last bottom.

61. A shoe making machine, having in combination, means for supporting a shoe, heel lasting means, automatic means for actuating the lasting means a predetermined plural number of times to work the upper over the heel seat of the last, and means for automatically raising the shoe support between two inward strokes of the lasting means.

62. In a shoe making machine, having, in combination, means for supporting a shoe, heel lasting means, automatic means for actuating the lasting means a predetermined plural number of times to work the upper over the heel seat of the last, a bottom rest for the shoe, means for uplifting the shoe support yieldingly, and means for raising the bottom rest between reciprocating movements of the wiping means.

63. A shoe making machine, having in combination, means for supporting a shoe, heel lasting means, automatic means for actuating the lasting means a predetermined plural number of times to work the upper over the heel seat of the last, a bottom rest for the shoe, means for uplifting the shoe support yieldingly, means for locking the support against depression, and means for raising the rest to permit the shoe support to rise, said locking means operating automatically to secure the support in its raised position.

64. A shoe making machine having in combination lasting means, means for actuating the lasting means to overwork the margin of the upper and press it upon the shoe bottom, a shoe bottom rest, and means for changing the plane of the lasting means and of the shoe engaging face of the bottom rest relatively after the lasting means have advanced over the shoe bottom and before the return movement of the lasting means whereby dragging action tending to displace the overworked margin of the upper is reduced or avoided.

65. A shoe making machine having in combination lasting means, means for actuating the lasting means repeatedly during a single cycle of the machine's operation to work the upper over the shoe bottom, a shoe bottom rest and means for automatically raising the bottom rest between successive actuations of the lasting means.

66. A shoe making machine having in combination means for positioning a shoe,

means for forcing an upper over the last by repeated operations on the same part of the shoe, and means for automatically raising the shoe as the overworking operation progresses.

67. A shoe making machine having in combination shoe positioning means, means for forcing the upper over the last bottom, actuating mechanism for causing the latter means to act a plurality of times upon the same portion of the shoe, and means operating automatically to change the relative planes of the last positioning means and the overworking means between successive operations of the latter.

68. A shoe making machine having in combination shoe positioning means, means operating a plurality of times on the same portion of stock for forcing the upper from the edge inwardly over the last bottom and means operating automatically to raise and lower the shoe with relation to said overworking means to vary its pressure upon the shoe.

69. A machine of the class described having in combination a working tool, actuating mechanism for causing said tool to make a plurality of complete movements over the same portion of the work during a single cycle of the machine's operation, and means for automatically changing the position of the work between movements of the tool to change the effect of the tool upon the portion of the work under treatment.

70. A shoe making machine having in combination end embracing wipers, a shoe support, tack driving mechanism, means for actuating the wipers, means for raising the shoe after the initial advance of the wipers and before the tack is driven, and means for actuating the tacking mechanism.

71. A shoe making machine having in combination wipers, a shoe support, means for actuating the wipers to break down the upper materials over the edge of the last, and means for raising the shoe, said machine having provision for automatically actuating the wipers again during the same cycle of the machine and over the same portion of the upper materials to wipe in and iron down the upper into lasted position.

72. A shoe making machine having in combination a wiper, a shoe support, tack driving mechanism, means for actuating the wipers a plurality of times during the same cycle of the machine, means for raising the shoe between actuations of the wiper, and means for actuating the tacking mechanism while the wiper holds the upper in position to be fastened.

73. A shoe making machine having in combination cooperating end lasting wipers, a shoe support, gang tacking means, and automatic actuating mechanism for said

parts arranged to effect a relative movement of the last and wipers perpendicular to the plane of the last bottom during the operation of the machine.

74. A machine of the class described having, in combination, end lasting means, mechanism for moving the lasting means over a last bottom and retracting it, and means operated automatically in advance of the operation of the lasting means to level the last transversely, and again while the lasting means is over the last bottom to depress the last for relieving drag upon the upper during the return movement of the lasting means.

75. A machine of the class described having, in combination, a last support on which the last can have lateral angular positioning movement, heel lasting wipers, last positioning means constructed and arranged to engage the heel seat of the shoe at points separated laterally by a substantial distance, and means for relatively actuating said lasting wipers and the last to bring the heel seat and the wipers into substantial parallelism prior to the advance of the wipers and for further relatively actuating the wipers and the last in the direction to separate the wipers and the heel seat vertically to facilitate the retraction of the wipers.

76. A machine of the class described having, in combination, a last support on which the last can have lateral angular positioning movement, heel lasting wipers, and means arranged to engage the shoe bottom at separate points located on opposite sides of the median line of the shoe and near the edges of the innersole adjacent to the heel breast line to hold the inner-sole down in the shank during the operation of the wipers.

77. A machine of the class described having, in combination, a last support on which the last can have lateral angular positioning movement, heel lasting wipers, and means comprising relatively unyielding members arranged to engage the inner sole at opposite sides of the last near its edges to hold the innersole down upon the last bottom during the operation of the wipers.

78. A machine of the class described having, in combination, heel lasting wipers, means for automatically actuating the wipers, means for supporting the shoe arranged to permit the last to tip thereon, and means independent of the wipers serving without attention from the operator for engaging the heel seat of the shoe to tip it into position to receive the operation of the wipers.

79. A machine of the class described having, in combination, heel lasting wipers, means for automatically actuating the wipers, means for supporting the shoe arranged to permit the last to tip thereon; and

means for engaging and actuating the shoe so supported to level the heel seat of the shoe transversely in advance of the action of the wipers.

5 80. A machine of the class described having, in combination, heel lasting wipers presenting a substantially continuous acting edge and arranged to advance and turn to overwipe the upper upon the entire heel
10 seat at one operation, means for automatically actuating the wipers, means for supporting the shoe, and means for engaging the shoe bottom to position the shoe vertically and adapted for movement perpen-
15 dicularly to the shoe bottom during the operation of the wipers.

81. A machine of the class described having, in combination, means for supporting a shoe, heel lasting wipers mounted for recip-
20 rocation in a single plane substantially parallel with the plane of the heel seat, means for automatically operating the wipers, and means for engaging the shoe bottom to position the shoe vertically and arranged for
25 movement to cause the shoe to be positioned differently with relation to the plane of movement of the wipers during different portions of the operation of the wipers in-
30 cluding a movement to depress the shoe and hold it down during the retraction of the wipers.

82. A machine of the class described having, in combination heel lasting wipers, means for automatically actuating the
35 wipers, means for supporting the shoe, means for engaging the shoe bottom to position the shoe vertically, and means for automatically raising it during the operation of the wipers.

40 83. A lasting machine having, in combination, a shoe support, end lasting mechanism, a shoe bottom rest formed and arranged to hold the innersole in position for the upper to be lasted over it, means for
45 moving the shoe endwise into said end lasting mechanism, and a support for the bottom rest arranged to permit said rest to accompany the shoe in the endwise movement thereof into the lasting mechanism.

50 84. A machine of the class described, having, in combination, a yielding shoe support, means for operating upon the shoe, means for moving the shoe into the field of operation of the operating means, a rest to
55 engage the bottom of the shoe and positioning it vertically with relation to the operating means, a support for said rest, and a sliding connection between the rest and its support arranged to permit the shoe to be
60 positioned vertically before it is moved backwardly and allow the rest to accompany the shoe in its backward movement.

85. A lasting machine having means for working an upper over an innersole on a
65 last bottom, shoe supporting means mov-

able to present the shoe to said overworking means, an innersole clamp arranged to hold the innersole down upon the last bottom adjacent to its edge to facilitate the overworking of the upper, and means for supporting
70 the clamp arranged to permit the clamp to accompany the shoe in the movement thereof for presenting the shoe to the overworking means.

86. A shoe making machine, having in
75 combination, power driven mechanism for operating on a shoe, a work support sustained for swinging movement from and toward the machine and for endwise vertical movement, and connections operated
80 automatically from said power driven mechanism for uplifting the support and pulling it toward the machine.

87. A shoe making machine, having in combination, a work support sustained for
85 swinging movement from and toward the machine and for endwise vertical movement, and connected mechanism for uplifting the support and pulling it toward the machine, and automatically operating means to lock
90 the support against return movement in either direction.

88. A shoe making machine, having in combination, a work support sustained for
95 swinging movement from and toward the machine and for endwise vertical movement, and independently yielding means for simultaneously uplifting and inswinging the shoe support.

89. A shoe making machine, having in
100 combination, a work support sustained for swinging movement from and toward the machine and for endwise vertical movement, means for operating upon the shoe, power-driven means for uplifting and inswinging
105 the support, and means for automatically locking the support against reverse movements while the machine is running and unlocking it when the machine stops.

90. A machine of the class described, having in combination, a shoe support, means
110 for working an upper over a last, and power-driven mechanism for forcing the last inwardly toward the machine and upwardly toward the plane of the overwork-
115 ing means in time relation with the lasting movements of said latter means.

91. A machine of the class described, having in combination, a shoe support, a heel embracing band, and power-driven means
120 for actuating the shoe backwardly into the band, and simultaneously actuating the sides of the band to close against the ingoing shoe.

92. A machine of the class described, having in combination, a shoe support, a heel embracing band, and power-driven means
125 for actuating the shoe backwardly into the band, and band operating means driven by said power means and constructed and ar-
130

ranged to draw the end portions of the band forwardly and simultaneously close them inwardly against the ingoing shoe.

93. A machine of the class described, having in combination, a base, a jack post pivoted on the base, a shoe supporting spindle movable endwise in the post, and provided with rack teeth adjacent said pivot, a pinion located at the pivot to engage the rack teeth and means for actuating the pinion to move the spindle vertically.

94. A machine of the class described, having in combination, a base, a jack post, pivoted on the base, a shoe supporting spindle movable endwise in the post, and provided with rack teeth, a lateral rack bar connected to the jack post, a pinion arranged to engage said bar, an actuator and independently yielding connections between the actuator and the two pinions to move the shoe supporting spindle vertically and laterally.

95. In a machine of the class described, the combination with mechanism for working on a shoe, of a last supporting spindle, and means for actuating it in two directions toward said mechanism comprising the actuator 46, the cranks 44 having lost motion with relation to the actuator, the springs 45 between the cranks and the actuator, and separate connections from the cranks to the last spindle substantially as shown and described.

96. In a machine of the class described, a shoe support, an end embracing band, means for moving the shoe backwardly into the band and operatively connected means for actuating the band forwardly in frictional contact with the sides of the shoe.

97. In a machine of the class described, a shoe support, a heel embracing band, means for putting the upper under lengthwise forward tension, and means for moving the shoe backwardly into the band whereby the frictional engagement of the band with the upper assists in stretching the upper forwardly.

98. In a machine of the class described, a shoe support, a heel embracing band, means for putting the upper under lengthwise forward tension, means for moving the shoe backwardly into the band, and means for actuating the band forward in frictional contact with the upper on the sides of the heel to assist in stretching and conforming the upper to the contour of the last.

99. A machine of the class described, having in combination, means for supporting a shoe, and means for conforming the upper to the contour of the heel portion of the last, comprising a plurality of parallel independently extensible cords arranged to embrace the heel portion of the shoe.

100. A machine of the class described, having in combination, means for supporting a shoe, and means for conforming the

upper to the contour of the heel portion of the last comprising a plurality of parallel independent cords arranged to embrace the heel portion of the shoe, and means for actuating said cords inwardly and forwardly.

101. A machine of the class described, having in combination, means for supporting a shoe, and means for conforming the upper to the contour of the heel portion of the last comprising a plurality of parallel, independently extensible cords arranged to embrace the heel portion of the shoe, and actuating means constructed and arranged to apply forward tension to the cords while closing them inwardly about the sides of the heel portion of the last.

102. A machine of the class described, having in combination, an end embracing band and operating devices for closing the band, including levers comprising two members which are pivotally connected and relatively yielding, said levers being constructed and arranged to project forwardly the ends thereof which are connected to the band when the band contacts with the sides of the shoe.

103. A machine of the class described, having in combination, an end embracing band and operating devices for closing the band including the levers 54, having the pivoted blocks 52 mounted to yield thereon and arranged to begin actuating the band forwardly when the band engages the work in its closing movement.

104. A machine of the class described, having in combination, an end embracing band and operating devices for closing the band arranged to close the sides of the band toward the sides of the shoe without substantial forward movement until the shoe is engaged and then to begin automatically to tension the band forwardly in contact with the upper on the sides of the last.

105. In an apparatus of the class herein described, means for conforming an upper to a last having an innersole upon its bottom face, said apparatus having provision for acting upon the innersole at its two ends to position it lengthwise.

106. In an apparatus of the class herein described, means for conforming an upper to a last, having an innersole upon its bottom face, said apparatus having provision for acting upon the inner-sole at its two ends to position it lengthwise and being adapted to bow the sole down into the shank of the last bottom.

107. In an apparatus of the class herein described, means for engaging the forward portion of an innersole on a last bottom, and means for putting an upper under tension about the heel portion of the last and crowding the innersole forwardly to cause it to fit down into the shank of the last.

108. In an apparatus of the class herein

described, an abutment for the toe end of an innersole, and means for clamping the innersole down upon the last bottom to hold it in adjusted relation to said abutment.

109. In an apparatus of the class herein described, means for engaging the innersole on a last bottom forward of the shank of the last and adapted for movement to push the innersole backwardly, and means to effect a forward movement of the heel portion of the innersole whereby it is forced downwardly into the shank of the last.

110. In an apparatus of the class herein described, means for engaging the innersole on a last bottom forward of the shank of the last and adapted for movement to push the innersole backwardly, means to effect a forward movement of the heel portion of the innersole whereby it is forced downwardly into the shank of the last, and means for lasting the heel portion of the shoe while the innersole is so held.

111. In an apparatus of the class herein described, the rest 17 for engaging the forward portion of the innersole upon a last, the movable carrier 15 for the rest by which it may be caused to push the innersole backwardly, the stop 19, the grippers for putting the upper under forward tension about the heel portion of the last whereby the end of the innersole projecting rearwardly beyond the end face of the last is crowded forwardly while the forward portion is held by the rest 17, and operating means 28, 26 for the rest carrier and the grippers.

112. A machine of the class described having in combination, end lasting wipers and gang tacking mechanism arranged to locate the tacks inside the edges of the wipers at opposite sides of the shoe and to drive the tacks in a direction inclined inwardly whereby the ingoing tacks shall draw the upper inwardly from the opposite edges of the shoe or take up the slack that may exist between the line of tacks and the edge of the wipers.

113. A machine of the class described having means for working an upper into position to be fastened, automatically operating means for driving tacks to fasten the upper, and a device adapted to be set by the workman to prevent the driving of the tacks in a cycle of the machine's operation, said machine having provision for automatically resetting said device to permit the insertion of the tacks in the next cycle.

114. A machine of the class described having in combination, heel lasting wipers for forcing an upper over a last, a gang tacker to fasten the upper, the shouldered bar 130, arranged for movement in the tacking operation, the forked slide 140 adapted to be positioned for preventing such movement of the bar, and the hand lever 145 arranged to

control the position of the slide 140 substantially as and for the purpose described.

115. A machine of the class described having in combination, mechanism for working stock into position to be fastened, mechanism for feeding and inserting fastenings, power driven means for actuating said mechanism having provision for permitting the operator to inspect the work between the stock working and fastening operations, and means controlled by the operator to prevent the driving of the fastenings during the completion of the machine's cycle if the upper is not properly overworked.

116. A machine of the class described having in combination, mechanism for working stock into position to be fastened, mechanism for feeding and inserting fastenings, power driven means for actuating said mechanisms having provision for permitting the operator to inspect the work between the stock working and fastening operations, and means controlled by the operator to prevent the driving of the fastenings during the completion of the machine's cycle if the upper is not properly overworked, and also to prevent the feeding of more fastenings until the waiting fastenings have been driven.

117. A machine of the class described having in combination, mechanism for working stock into position to be fastened, mechanism for feeding and inserting fastenings, power driven means for actuating said mechanism having provision for permitting the operator to inspect the work between the stock working and fastening operations, and means controlled by the operator to prevent the driving of the fastenings during the completion of the machine's cycle if the upper is not properly overworked, said machine having provision for automatically resetting said manually controlled means to cause the driving of the fastenings in the next cycle.

118. A machine of the class described having in combination, mechanism for working stock into position to be fastened, mechanism for driving tacks to fasten the stock, power driven means for actuating said two mechanisms, and means arranged to be manually adjusted to prevent the driving of tacks during one cycle and to be readjusted automatically to allow the driving of the tacks in the next cycle.

119. A machine of the class described, having in combination, mechanism for working stock into position to be fastened, mechanism for feeding and driving tacks to fasten the stock, power driven means for actuating said two mechanisms, and means arranged to be manually adjusted to prevent the feeding of tacks during one cycle and to be readjusted automatically to allow the feeding of the tacks in the next cycle.

120. A machine of the class described, having in combination, means for positioning the stock to be fastened, means for fastening the stock, power driven mechanism for actuating said two means having provision for permitting the work to be inspected between the stock positioning and fastening operations, and means under control of the operator to delay the fastening operation and cause the positioning operation to be repeated.

121. A machine of the class described, having in combination, means for positioning stock to be fastened, means for fastening the stock, power driven mechanism for actuating said two means having provision for permitting the work to be inspected between the stock positioning and fastening operations, and means under control of the operator to delay the fastening operation until the positioning operation has been repeated, said machine having provisions for them automatically fastening the stock.

122. A lasting machine having in combination, end lasting means, upper fastening means, power driven mechanism for actuating said two means having provision for permitting the work to be inspected between the operations of the two means, and means under control of the operator to cause the lasting means to repeat its operation before the fastening operation takes place.

123. A lasting machine having in combination, end lasting means, upper fastening means, power driven mechanism for actuating said two means having provision for permitting the work to be inspected between the operations of the two means, said machine having provision for causing the lasting mechanism to repeat its power driven operation before the fastening operation takes place.

124. A lasting machine having holding means for engaging the upper and lower sides of a shoe, end lasting wipers, a gang tacker and automatically operated means to actuate the wipers repeatedly and then come to rest before the tacker is operated, said machine having provision for causing at the will of the operator a further operation of the wipers before the tacker fastens the upper.

125. A lasting machine having holding means for engaging the upper and lower sides of a shoe, end lasting wipers, a tacker and, automatically operated means to advance the wipers repeatedly, and then come to rest before the tacker is operated, said machine having provision for preventing the fastening of the upper in the first cycle of the machine, and repeating the cycle for further over-working and then fastening the upper while the holding means continues to maintain the shoe in operative relation to the wipers.

126. A machine of the class described, having in combination, means for gripping the forward portion of an upper to pull it forwardly on a last and hold it under lengthwise tension, a heel embracing band and means for actuating said band forwardly and inwardly for tightening and conforming the upper materials to the heel portion of the last while they are so held by the pulling means.

127. A machine of the class described, having in combination, means for gripping the forward portion of an upper and pulling it to put and hold the rear portions of the upper under lengthwise strain about the heel portion of the last while said rear portions are free to conform to the contour of the last and means for thereafter embracing the heel portion of the shoe to clamp said rear portions of the upper to the last.

128. A machine of the class described, having in combination, means for pulling a loose upper to conform it to the rear portion of a last, a flexible heel embracing band, and means to actuate it thereafter for clamping the upper to the last.

129. A machine of the class described, having in combination, grippers arranged to close upon the upper with the plane of their gripping faces substantially in the plane of the line of strain to be effected, and means for actuating the grippers angularly in a direction tending outwardly away from the last as they pull to bend the upper across the end of one of the jaws whereby the holding force of the jaws is increased with the increase in the tension applied.

130. A machine of the class described, having in combination, grippers arranged to close upon the upper with the plane of their gripping faces substantially in the plane of the line of strain to be effected, and means for actuating the jaws angularly about a fixed pivot located near the jaws and below the plane of the shoe bottom to effect the pulling strain.

131. A machine of the class described, having in combination, means for supporting a last in inverted position, grippers pivotally supported below the plane of the last bottom to grip the toe portion of the upper, means for actuating the grippers about said pivotal support to pull the upper and means engaging the toe portion of the last to hold it during the upper pulling operation.

132. A heel wiper mechanism comprising side wipers, an end wiper, means connected with said three wipers to actuate them respectively transversely and lengthwise of the last and links forming corner wipers connecting the side and end wipers and partaking of the movements of both.

133. A heel wiper mechanism comprising side wipers, an end wiper, means connected

with said three wipers to actuate them respectively transversely and lengthwise of the last and links forming corner wipers connecting the side and end wipers and partaking of the movements of both, and supplemental means for actuating the links toward the corners of the heel.

134. A heel wiper mechanism comprising side wipers, an end wiper, means connected with the side wipers to actuate them transversely of the last bottom, links forming corner wipers between the end and side wipers; means connected with the end wiper for actuating all the wipers lengthwise of the shoe, and supplemental means for actuating the corner wipers obliquely transversely of the shoe.

135. An end lasting mechanism having in combination, opposed side wipers, end wiping means, intermediate corner wipers, means for actuating all the wipers lengthwise of the shoe, means for actuating the side wipers transversely of the shoe and means for actuating the corner wipers obliquely of the shoe.

136. An end lasting mechanism having in combination, opposed side wipers, an end wiper, intermediate corner wipers, means for actuating all the wipers lengthwise of the shoe, means for actuating the side wipers transversely of the shoe and means for actuating the corner wipers obliquely of the shoe, the means for actuating the several wipers being arranged to yield independently.

137. A machine of the class described, having end lasting wipers and automatically operating means for actuating the wipers over the same portion of the work repeatedly, said machine being constructed and arranged to give different characteristics to successive wiping operations over the work.

138. A machine of the class described, having end lasting wipers and means for automatically advancing the wipers repeatedly over the same portion of the shoe to do their work, said machine having provision for advancing the wipers at different speeds in successive actuations.

139. A machine of the class described, having end lasting wipers and means for automatically advancing the wipers repeatedly over the same portion of the shoe to do their work, said machine having provision for advancing the wipers in different planes automatically determined in successive actuations.

140. A machine of the class described, having end lasting wipers and means for automatically advancing the wipers repeatedly over the same portion of the work and stopping them in holding relation to the overworked upper of the shoe.

141. A machine of the class described,

having end lasting wipers and means for automatically advancing the wipers and stopping them in partially retracted position to hold the upper while tacks are inserted in a portion of the upper uncovered by said partial retraction of the wipers.

142. A machine of the class described, having in combination, a wiper, a tackler and automatically operating mechanism to advance the wiper and partially retract it, said machine having provision for stopping the moving parts with the wiper holding the upper and then restarting to drive the tacks.

143. A machine of the class described, having in combination, end lasting wipers, an end embracing band, and automatically operating means to close the band and then actuate the wipers.

144. A machine of the class described, having in combination, end lasting wipers, an end embracing band, and automatically operating means to close the band and then repeatedly actuate the wipers over the shoe bottom while the band clamps the shoe.

145. A machine of the class described, having in combination, end lasting wipers, an end embracing band, and automatically operating means to close the band and then repeatedly actuate the wipers, said machine having provision for further tightening the band between actuations of the wipers.

146. A machine of the class described, having in combination, end lasting wipers, an end embracing band, and automatically operating means to close the band and then repeatedly actuate the wipers, said machine having provision for raising the shoe and the band while the wipers are being repeatedly actuated.

147. A machine of the class described, having in combination, end embracing wipers, means for automatically closing the wipers over the shoe bottom to do their work and thereafter withdrawing them, and means for automatically moving the shoe and the wipers relatively in a direction perpendicular to the last bottom to relieve the pressure of the wipers on the upper before they are withdrawn.

148. A machine of the class described, having in combination, heel embracing wipers, means for automatically closing the wipers over the shoe bottom, means for fastening the upper while it is held by the wipers, and means for automatically moving the shoe and the wipers relatively in a direction to relieve the pressure of the latter before the wipers are retracted.

149. A machine of the class described, having in combination, a wiper, a tackler and automatically operating mechanism to advance the wiper, partially retract it, insert a tack and then complete the retraction of the wiper.

150. A machine of the class described,

having in combination, a wiper, a tack- 65
er and automatically operating mechanism to
advance the wiper, partially retract it, in-
sert a tack, relieve the pressure of the wiper
and then complete its retraction.

151. A machine of the class described, 70
having in combination, a wiper, a tack-
er and connected operating mechanism to ad-
vance the wiper, back it to uncover the tack-
ing line while still holding the stock, in-
sert a tack and then complete the retraction
of the wiper.

152. A machine of the class described,
having in combination, a wiper to force 15
shoe upper stock into position to be fas-
tened over the bottom of a last, and means
for actuating the wiper having provision
for automatically retracting the wiper
through a part only of its return movement
and then pausing to uncover the fastening 20
point while the wiper continues to hold the
upper.

153. A machine of the class described
having in combination, a wiper to force shoe 25
upper stock into position to be fastened over
the bottom of a last, and means for advanc-
ing the wiper constructed and arranged to
effect automatically a slight retraction of
the wiper at the end of the forward stroke
of the actuating means to permit a fasten- 30
ing to be inserted at a point covered by the
wiper in its most advanced position.

154. A machine of the class described
having in combination, end lasting wipers 35
for closing over a last bottom, means to
limit the closing of the wipers and actuating
means for the wipers including means be-
coming operative automatically to retract
the wipers partially after the limiting
means has become operative. 40

155. A machine of the class described,
having in combination, end lasting wipers,
means for limiting the closing of the wipers
in accordance with the size of the shoe, and 45
actuating means for the wipers having pro-
vision for automatically backing the wipers
to uncover enough of the wiped in portion
of upper to receive the tacks.

156. A machine of the class described,
having in combination an extensible heel 50
band, power operated means for forcing the
shoe yieldingly back into said band, and ad-
ditional means for limiting the backward
movement of the shoe.

157. A machine of the class described,
having in combination, lasting devices, an 55
extensible heel band, means for forcing the
shoe backwardly into said band, and means
in addition to said band and forcing means
for limiting the movement of the shoe to de-
termining its position with relation to the last-
ing devices. 60

158. A machine of the class described,
having in combination, devices for operat-

ing on a shoe, a heel band supported to per- 65
mit lateral movement, means for forcing the
shoe into said band and means supplemental
to the heel band constructed and arranged
to center the shoe with relation to the de-
vices for operating on the shoe. 70

159. A machine for working an upper 75
over a last having, in combination, power
operated means for working the margin of
the upper over upon the innersole, power
operated upper securing means, said two 75
means normally and automatically operat-
ing successively on a shoe, operating mech-
anism therefor constructed and arranged to
permit the operation of said overworking
means to be repeated on the same shoe while 80
held continuously in position for such oper-
ation, before the securing means operates,
and means under control of the operator for
rendering said securing means inoperative.

160. In a machine of the class described, 85
a lasting device, a lever that is movable
about its fulcrum for actuating said device,
said lever being also partially rotatable
about its longitudinal axis, a locking plate,
and a connection between said lever and 90
plate adapted to be actuated by said partial
rotation to lock and release the lever.

161. A shoe making machine having in
combination, a wiper, means for actuating 95
the wiper over the shoe bottom inwardly
from the shoe edge and means for auto-
matically depressing the shoe before the re-
traction of the wiper.

162. A shoe making machine having in
combination, end lasting wipers, means for 100
advancing them to work the upper over the
end portion of the last, and means operating
automatically to move the wipers and the
last relatively before the wipers are retracted
to relieve the drag of the wipers over the 105
upper while they are being retracted.

163. A shoe making machine having in
combination, end lasting wipers, means for 110
actuating them to do their work, shoe posi-
tioning means, and means for actuating said
positioning means automatically in time re-
lation with the backward movement of the
wipers to relieve the pressure of the wipers
on the upper before the wipers are re-
tracted. 115

164. A shoe making machine having in
combination, a wiper, a vertically movable
shoe support, a hold down for the shoe,
means for actuating the wiper and means for 120
automatically actuating the hold down up-
wardly and then downwardly again between
the initial advance of the wiper and the final
retraction of the wiper.

165. A shoe making machine having in
combination, a wiper, a hold down for the 125
shoe, means for actuating the wiper and
means for automatically actuating the hold
down upwardly before an advance of the

wipers and lowering the hold down to depress the shoe for the return movement of the wipers.

166. A machine of the class described, having in combination, means for supporting a last in inverted position, grippers, means for guiding and actuating the grippers to strain the upper lengthwise of the last in substantially right lines from the grippers to the heel, and means for lasting the heel portion of the shoe while the upper is held under such strain.

167. A lasting machine having in combination, lasting means, a back stop to position the shoe and means to adjust the back stop for shoes of different sizes including provision for indicating the correct adjustment for particular sizes.

168. A machine of the class described having in combination, heel seat lasting wipers including cooperating lasting plates and gang tacking mechanisms and a back stop adjustable to different positions for shoes of different sizes.

169. A shoe lasting mechanism having in combination, an end embracing band, devices for supporting and actuating the band to embrace a shoe, and independently yielding clamps acting through the band at a plurality of points in its length to compress the upper materials against the sides of the last.

170. A shoe lasting mechanism having, in combination, an end embracing band, and means for supporting and operating the band to embrace a shoe, including a pressure applying device at each side of the shoe formed to act upon the band near its upper edge and also at a separate point below said edge and pivoted between said edges to equalize the pressure.

171. A shoe lasting mechanism having, in combination, an end embracing band, and means for supporting and operating the band to embrace a shoe, including a pressure applying device comprising a carrier having horizontal arms swiveled on a vertical axis and a member having upper and lower pressure applying faces swiveled on each arm between said upper and lower faces for the purpose described.

172. A shoe lasting mechanism having in combination, an end embracing band, means for supporting and actuating the band to embrace the shoe, and additional means comprising swiveled clamping blocks each representing a plurality of separate contact points arranged to act through the band to assist in clamping the upper materials against the sides of the last.

173. A shoe lasting mechanism having in combination, means for supporting a shoe, and lasting devices to work the upper over the heel portion of the last, upper clamping means comprising a plurality of clamping members distributed about the heel portion

of the shoe, and means for relatively actuating said members and the last to conform the upper to the side faces of the last.

174. A shoe lasting mechanism having in combination, a clamp comprising a swiveled block forked to embrace the heel end of the last and having shoe engaging members swiveled to the block and each provided with an upper and a lower contact surface, and means for relatively actuating the clamp and the shoe to compress the upper materials against the last substantially as and for the purpose described.

175. A machine of the class described having in combination, end lasting means and shoe clamping means comprising opposed arms arranged to swing toward and from the shoe, blocks swiveled on vertical axes on said arms and contact members swiveled on horizontal axes on said blocks to engage the shoe at points spaced apart lengthwise of the shoe.

176. A machine of the class described having in combination, end lasting means and shoe clamping means comprising opposed arms arranged to swing toward and from the shoe, blocks swiveled on vertical axes on said arms and contact members swiveled on horizontal axes on said blocks and having shoe engaging faces spaced apart vertically for the purpose described.

177. In a machine of the class described, a shoe clamping member comprising the swiveled block 692 having lateral converging arms, and contact members 693 swiveled in said arms on lengthwise axes and having engaging faces formed to insure contact with the upper at the upper and lower ends of said faces.

178. A machine of the class described having, in combination, means for use in assembling a shoe, including means movable lengthwise of the shoe for putting the upper under forward tension about the heel portion of the last and holding the parts of the upper in assembled relation by such tension, and means for lasting the heel seat portion of the shoe while the parts are so held.

179. A machine of the class described having, in combination, means for use in assembling a shoe, including means for gripping the forward portion of the upper and movable lengthwise of the shoe for pulling it to put the upper under forward tension about the heel end of the last and hold the parts of the shoe in assembled relation to the last by such pulling tension, and heel seat lasting mechanism arranged to operate on the shoe while the parts are so held.

180. A machine of the class described having, in combination, means for supporting a last, end embracing wipers, and automatically operated mechanism constructed and arranged to work the entire end portion of the upper into lasted position under pres-

sure serving to compact the overworked upper upon the last bottom, and thereafter to relieve the pressure and subsequently to withdraw the wipers, all in a single operation of the machine.

181. A machine of the class described having, in combination, means for supporting a shoe, end embracing wipers adapted to work the upper into lasted position over the entire heel seat of the shoe at one operation of the machine, tacking mechanism, and power operated mechanism to move the wipers forwardly and backwardly over the same portion of the shoe, and bring the wipers automatically to rest in a position to hold the overwiped upper while the upper is being fastened by the tacking mechanism and thereafter to operate the tacking mechanism.

182. A machine of the class described having, in combination, means for supporting a shoe, end lasting wipers, and power driven means constructed and arranged to reciprocate the end lasting wipers over the same portions of the shoe bottom repeatedly.

183. A machine of the class described having, in combination, means for supporting a shoe, end lasting wipers, and power driven means constructed and arranged to reciprocate the end lasting wipers over the same portion of the shoe bottom a predetermined plural number of times.

184. A machine of the class described having, in combination, means for supporting a shoe, end lasting wipers, and power operated mechanism constructed and arranged to reciprocate the wipers over the shoe bottom and to bring the wipers to rest automatically in a partially retracted position to permit the shoe upper to be fastened while it is held by the partially retracted wipers.

185. A machine of the class described having, in combination, means for supporting a shoe, end lasting mechanism including end embracing wipers, power operated mechanism constructed and arranged to cause the wipers to force the margin of the entire end portion of the upper into lasted position over the shoe bottom and then partially to retract the wipers and automatically bring the wipers to rest in a predetermined position holding the upper to permit it to be fastened, and means for fastening the upper inside the edges of the partially retracted wipers while the lasting mechanism holds the upper.

186. A machine of the class described having, in combination, means for supporting a shoe, end lasting wipers constructed and arranged to work the upper into lasted position over the entire end portion of the shoe at a single operation, a gang tacker, and connected mechanism to actuate said lasting and tacking instrumentalities to last

and tack an end portion of a shoe at a single operation.

187. A machine of the class described having, in combination, means for supporting a shoe, heel lasting mechanism constructed and arranged to work the upper into lasted position over the entire heel seat portion of the shoe at a single operation, automatic operating mechanism therefor having provision for stopping at a predetermined point in its cycle for holding the upper in lasted position while it is tacked, and means for tacking the upper while it is so held.

188. A machine of the class described having, in combination, last supporting means, heel lasting wipers, and automatically operating mechanism to advance the wipers repeatedly and to raise the last support while the wipers are at one end of their movement.

189. A machine of the class described having, in combination, last supporting means, heel lasting wipers constructed and arranged to work an upper into lasted position over the entire heel seat portion of the shoe at a single operation and having stock flattening faces extending substantially continuously around the heel seat, and power operated mechanism to advance and retract the wipers and positively to effect a relative movement of the wipers and the last perpendicularly to the plane of said stock flattening faces to relieve the drag of the wipers during their retracting movement.

190. A machine of the class described having, in combination, a heel embracing band, heel lasting wipers, and power driven means to actuate said band and wipers in time relation to seize a shoe, shape the upper materials to the heel portion of the last, come to rest to permit the upper to be fastened and, when restarted, to relieve the shaping pressure and then return to shoe receiving relation.

191. A machine of the class described having, in combination, a heel embracing band, heel lasting wipers, and automatic operating means to close the band, repeatedly actuate the wipers, and then open the band.

192. A machine of the class described having, in combination, a heel embracing band, heel lasting wipers, and automatic operating means to close the band, actuate the wipers, tighten the band, and repeat the actuation of the wipers.

193. A machine of the class described having, in combination, a heel embracing band, heel lasting wipers, and automatic operating means to close the band, actuate the wipers, change the relative planes of the shoe bottom and the wipers, tighten the band, and repeat the actuation of the wipers.

194. A machine of the class described having, in combination, a heel embracing band, heel lasting wipers, and automatic operating

means to close the band, advance and retract the wipers, and open the band, said machine having provision for relatively moving the wipers and the shoe vertically while the band is closed.

195. A machine of the class described having, in combination, automatically actuated end lasting wipers, and automatically actuated tacking devices operatively connected therewith.

196. A machine of the class described having, in combination, automatically actuated end lasting wipers, and a gang tacker operated automatically in time relation with the wipers.

197. A machine of the class described having, in combination, means to pull an upper forwardly on a last and hold it under tension, operating devices to move said pulling means lengthwise of the last for stretching the upper and controlling its position during the heel seat lasting operation, and means for lasting the heel portion of the shoe while the upper is so held.

198. A machine of the class described having, in combination, means movable lengthwise of a last to pull an upper forwardly on the last and hold it under tension, and means operated automatically for lasting the heel portion of the shoe while the upper is so held.

199. A machine of the class described having, in combination, means engaging the forepart of an upper and movable lengthwise of a last to put the upper under forward tension about the heel portion of the last, additional means to clamp the upper about the heel portion of the last, and means for forcing the upper into lasted position upon the heel seat.

200. A machine of the class described having, in combination, means to put an upper under forward tension about the heel portion of the last, additional means to clamp the upper about the heel portion of the last, means for lasting the heel, and means for tacking the shoe to hold the upper.

201. A machine of the class described having, in combination, means to put an upper under forward tension about the heel portion of a last, and power driven mechanisms for overwiping and tacking the upper at the heel seat while it is so held under tension.

202. A machine of the class described having, in combination, means for adjusting relatively an upper, a heel stiffener and an innersole into assembled relation and for working said parts into lasted relation over the heel part of the last, and means for securing the parts together over the portion lasted.

203. A machine of the class described, having, in combination, means for adjusting relatively an upper, a heel stiffener and an in-

nersole into assembled relation and for automatically working said parts into lasted relation over the heel part of the last, and means for securing the parts together over the portion lasted.

204. A machine of the class described, having, in combination, means for adjusting relatively an upper, a heel stiffener and an innersole into assembled relation and for automatically working said parts into lasted relation over the heel part of the last, and means for automatically securing the parts together over the portion lasted.

205. A machine for operating upon parts of a shoe arranged upon a last, having, in combination, means for moving an innersole rearwardly upon a last, means for pressing a heel stiffener against the end and sides of the last, and means for securing the sides of the stiffener to the innersole.

206. A machine of the class described, having, in combination, automatic means for pressing a heel stiffener against the opposite sides of a last simultaneously, and an automatic means for thereafter securing the sides of the stiffener to an innersole carried by the last.

207. A machine of the class described, having, in combination, means for pressing a heel stiffener against the opposite sides of a last simultaneously, means for thereafter securing the sides of the stiffener to an innersole carried by the last, and means for bringing successively into operation said pressing means and securing means.

208. A gang heel seat fastening machine having, in combination, a gang of tackers, a shoe support, an end embracing band, and power mechanism for drawing the shoe support into the band and raising it to the working position and then coming automatically to rest, and means operating in time relation when the machine is restarted to compress the stock upon the last bottom and then effect insertion of the tacks.

209. A gang heel seat fastening machine having, in combination, a gang of tackers, a shoe support, end lasting means, and power mechanism for drawing the shoe support into the end lasting means and raising it to the working position and for actuating the tackers.

210. An end lasting mechanism having, in combination with suitable operating mechanism, heel embracing wipers comprising at each side of the heel three members connected for pivotal movement relatively, and means for directing such relative movement.

211. An end lasting mechanism having, in combination with suitable operating mechanism, heel embracing wipers comprising at each side of the heel rear end, corner and side members connected together for relative

pivotal movement and means for directing each member in a path differing from that of the others and adapted to the portion of the heel edge across which it is to operate.

212. An automatic heel seat laster having, in combination, a last support, heel embracing wipers for engaging and wiping over simultaneously the upstanding portions of the upper at both sides of the heel portion of the shoe, power operating mechanism for the wipers, guiding means for confining the wipers to movement in a single plane, means engaging the shoe bottom and determining its height relative to the plane of the wipers, a last support to uphold the shoe, and operating means to press the shoe up against the bottom engaging means and which is movable during the power operation of the machine to change the vertical relation of the shoe to the wipers.

213. An automatic end lasting machine having, in combination, end lasting wipers, guiding means for the wipers, power operating mechanism for advancing and closing the wipers a plurality of times over the same portion of the upper in lasting a single shoe, and means for changing the vertical position of the shoe with relation to the wipers between one advance of the wipers and their next automatically effected advance over the shoe bottom.

214. A heel seat forming machine having, in combination, a shoe support comprising a heel seat inside shaping member, end embracing wipers movable thereover to shape the flange of the upper, and power mechanism for operating said wipers to shape the flange and operating to release the shaping pressure prior to the retraction of the wipers to relieve outward drag on the shaped flange.

215. A shoemaking machine having, in combination, heel seat forming means including an inside former, heel embracing wipers, means for relatively moving the wipers and the former to turn the margin of an upper inwardly upon the heel seat face of the former and shape it under pressure and to return to starting position, and means for relatively moving the wipers and the former substantially perpendicularly to the plane of the heel seat face of the former prior to said return movement to prevent outward drag on the upper.

216. A machine of the class described having, in combination, a shoe holder and devices for maintaining the shoe stock in condition for the operation of tackers thereon, a plurality of tackers, power operated means for relatively moving the tackers and the shoe holder into position for the tackers to insert the tacks, and means controlled by the operator for modifying the normal sequence of the operations and causing the

power means to complete its cycle without driving the tacks and while said holder and devices retain their control of the shoe stock.

217. In a machine of the class described, shoe holding means including means for maintaining the shoe upper in position for fastening, upper securing devices, and power operated means therefor; and controlling means arranged for manual operation to determine for each shoe, after the operation of the machine has been commenced, whether the upper shall be secured or the machine shall be permitted to repeat its cycle upon the shoe so held by the first-mentioned means before the upper is secured.

218. A heel seat lasting machine having, in combination, a gage to position the toe end of an innersole flush with the toe end of the last, means to position the heel end of the innersole flush with the heel end of the last, means to bow the innersole down into the shank of the last and clamp the heel seat portion of the innersole down upon the last bottom at opposite sides near the breast line, and a plurality of fastening applying devices movable inwardly over the heel seat in converging lines and operating to fasten the upper along the margin of the heel seat.

219. A machine of the class described having, in combination, a gage to position the toe end of an innersole flush with the toe end of a last, means to position the heel end of the innersole flush with the heel end of the last, means to bow the innersole down into the shank of the last, and means for fastening the shoe upper to the heel seat portion of the innersole.

220. A machine of the class described having, in combination, means for operating on a shoe, and means for positioning the shoe comprising a heel pin, a spring arranged to rock the heel pin in the direction for tipping the toe end of the shoe upwardly, and a rest to engage the bottom face of the last to limit said movement of the toe end of the shoe and locate the bottom face of the last for the action of said operating means upon the shoe.

221. A machine of the class described having, in combination, means for supporting a shoe, and a gripper operatively connected with the shoe support and arranged in position to engage the forepart of the shoe upper and stretch the upper lengthwise of the last, said toe gripper being adjustable in a vertical path to compensate for differences in the angular relation of the plane of the heel seat of the last to the plane of the forepart of the last and effect proper drafting of the upper.

222. A machine of the class described having, in combination, a last support, a mold comprising cooperating jaws, heel seat wipers, and connected mechanism for actu-

ating the jaws to clamp the upper materials against the side faces of the last with molding pressure and to actuate the support and wipers to compress the heel seat and come to rest with the shoe under pressure in the mold.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

RONALD F. McFEELY.

Witnesses:

CHARLES H. HOTT,
LEONARD M. JOHNSON.

Corrections in Letters Patent No. 1,129,881.

It is hereby certified that in Letters Patent No. 1,129,881, granted March 2, 1915, upon the application of Ronald F. McFeely, of Beverly, Massachusetts, for an improvement in "Machines for use in the Manufacture of Boots and Shoes," errors appear in the printed specification requiring correction as follows: Page 5, line 31, for the word "blocks" read *block*; page 6, line 89, for the word "rigid" read *right*; page 12, line 82, strike out the word "In" first occurrence and make the article "a" a capital letter; page 20, lines 55-56, for the word "representing" read *presenting*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of September, A. D., 1915.

[SEAL.]

J. T. NEWTON,

Acting Commissioner of Patents.

J. CAVANAGH.
END LASTING MACHINE.
APPLICATION FILED APR. 28, 1911.

1,130,142.

Patented Mar. 2, 1915.

2 SHEETS-SHEET 2.

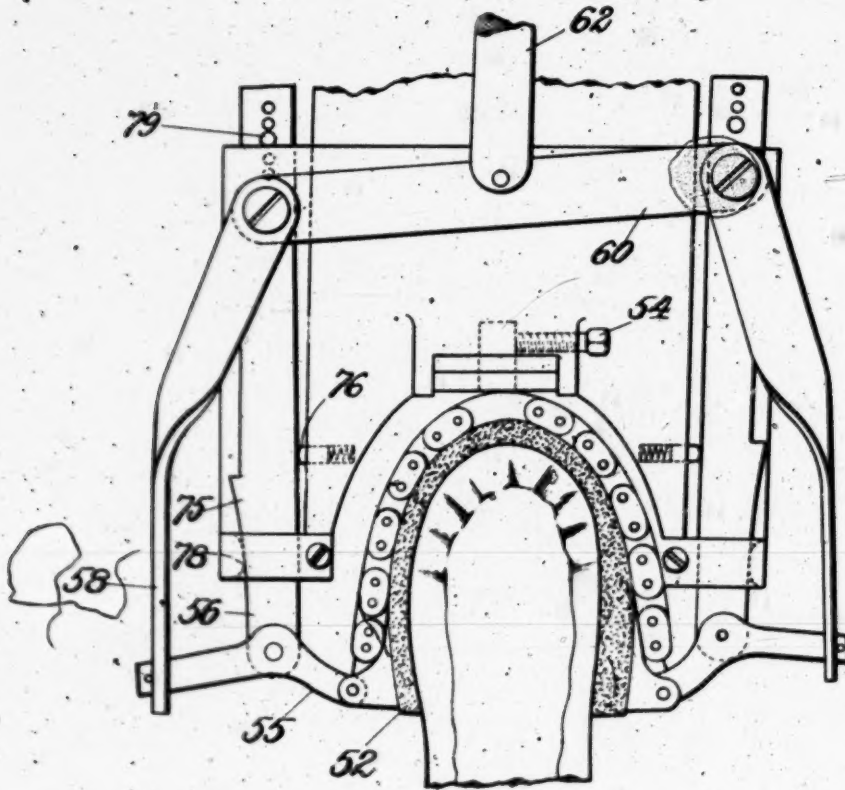


Fig. 2.

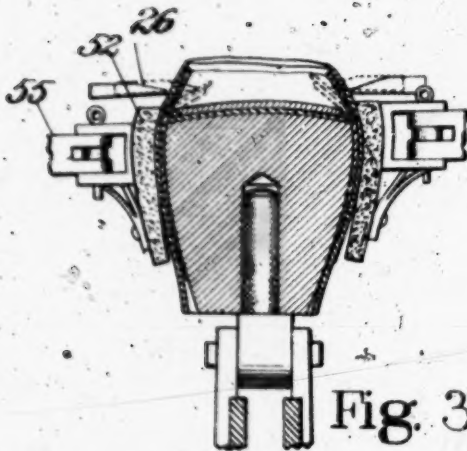


Fig. 3.

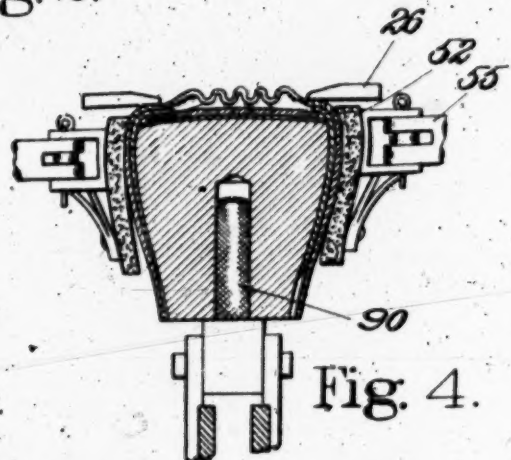


Fig. 4.

WITNESSES

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2 SHEETS-SHEET 1.

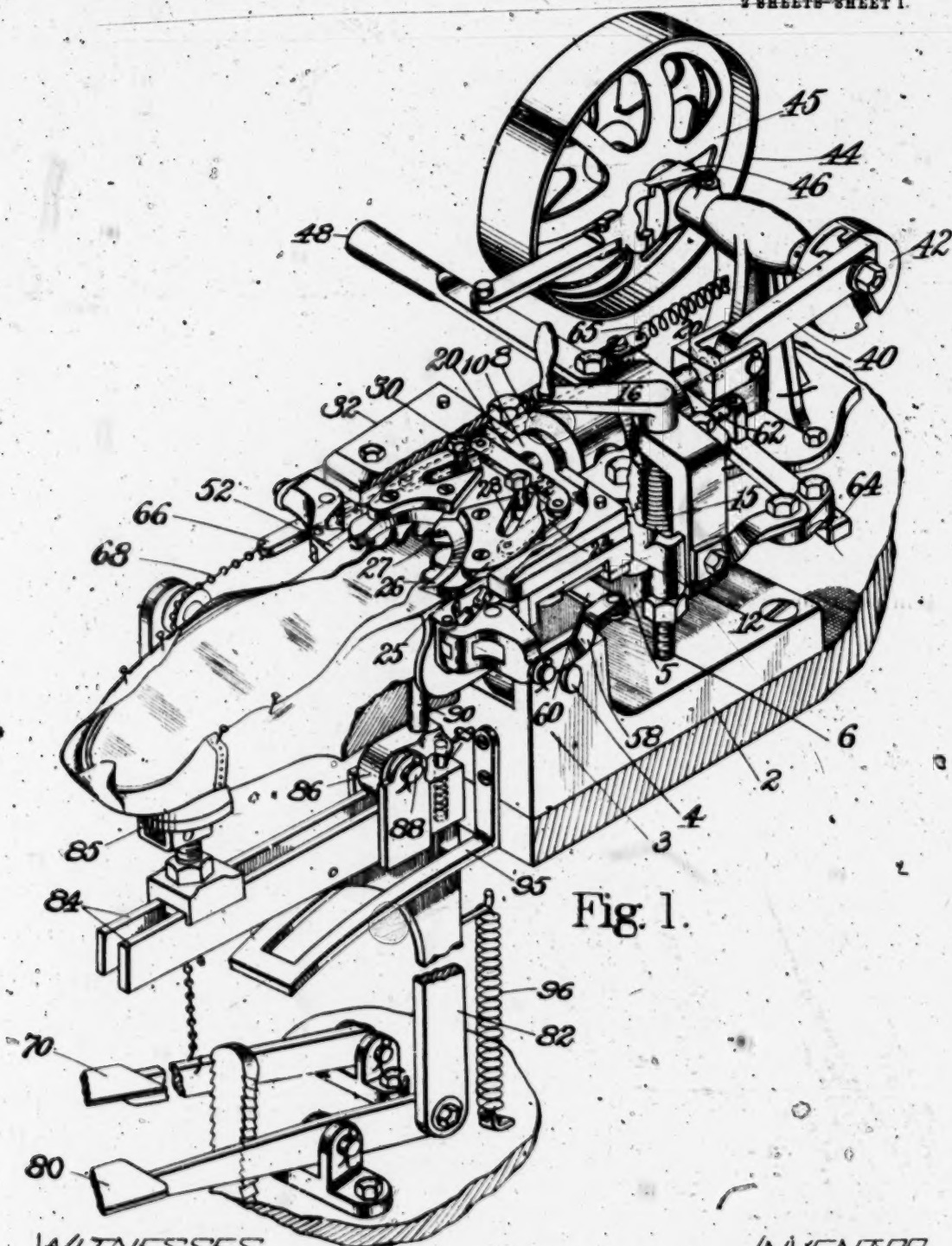


Fig. 1.

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UNITED STATES PATENT OFFICE.

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END-LASTING MACHINE.

1,130,142.

Specification of Letters Patent.

Patented Mar. 2, 1915.

Application filed April 28, 1911. Serial No. 623,820.

To all whom it may concern:

Be it known that I, JAMES CAVANAGH, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in End-Lasting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to end lasting machines and is herein shown as embodied in a heel seat lasting machine of the "bed" or wiper type.

An object of this invention is to produce a machine by which end lasting can be performed more expeditiously and with less labor than heretofore.

An important feature of this invention consists in the combination with means for holding a shoe, of end embracing wipers and automatic power driven operating mechanism connected with the wipers for causing them to work the upper material into lasted position. The automatic operating mechanism may be arranged to cause the wipers to advance repeatedly over the shoe bottom. Preferably, in connection with the automatically operated wipers, means is provided for moving the shoe relatively to the wipers. The shoe moving means may be arranged to lift the shoe into a higher plane with relation to the wipers after they have initially broken down the upper materials. This enables the power driven wipers to iron down or compress the overwiped portion of the upper materials firmly upon the insole and give to the lasted portion of the shoe the detail of form or contour and the permanency of shape which is desired in a well lasted shoe.

In accordance with a further feature of this invention, novel means is provided for clamping and maintaining the upper materials firmly against the side faces of the shoe end while they are being lasted down upon the insole by the power driven wipers. This feature of the invention is embodied in improved mechanism for closing and holding the heel embracing band whereby very secure clamping of the upper is obtained, with automatic adjustment of the band end closing pressure for right and left lasts that have very different shapes. Pref-

erably the band closing mechanism is operated by a treadle and advantageously this treadle and the one by which the shoe is uplifted are located adjacent to one another in position to be engaged by different portions of the same foot of the operator whereby he can with ease variably control the band closing and the shoe uplifting pressure.

The several features of the invention, including certain details of construction and combinations of parts, will appear from the following description of the illustrated embodiment of the invention and will be pointed out in the claims.

Figure 1 is a perspective view of the machine; Fig. 2 is a plan view; Figs. 3 and 4 are sectional views illustrating the operation of the lasting plates upon the stock.

The machine comprises a base 2 which may be fastened to a bench or table or may have a pedestal supporting it from the floor. This base has at its front end upstanding ears 3 between which there is pivoted at 4 the machine head 5 which carries the lasting devices. This head is adjustably supported in the rear of the pivot 4 by the screw rod 6. This mounting permits the longitudinal inclination of the lasting plates to be varied by adjustment above the pivot rod 4. The head is formed with a longitudinal bearing at 8 for the rearwardly extending cylindrical stem portion 10 of a plate 12 upon which the heel lasting device are carried. The bearing 8 is formed to expose a worm toothed portion of the stem with which the screw rod 15 engages to effect transverse adjustment of the lasting devices about the axis of the stem 10. The crank 16 provides convenient means for turning the screw rod.

The stem 10 has a sliding bearing for a rod 20 having a cross-bar 22 which is connected by the links 24 with the wiper carriers 25 to which the wipers or lasting plates 26 having formed edges extending toward the shank of the shoe are removably attached. The wiper carriers have cam slots 28 in which stand rollers on the fixed studs 30 that connect the plate 12 with a cover plate 32. The outer edges of the wiper carriers are curved to engage walls of the recess in the plate 12 in which the wiper carriers are inclosed by the cover plate. These walls and the cam slots 28 effect and

direct inward closing movement of the wipers as they are advanced by their link connection with the operating rod 20. The operating rod is connected at its rear end by a link 40 eccentrically to a disk 42 secured to a driving shaft supported by a stand attached to the bench. The disk 42 has a transverse dovetailed groove which permits the rod 40 to be connected more or less eccentrically with it according to the amplitude of movement desired for the wipers. At its other end the driving shaft has a loose pulley 44 and a clutch 45 is adapted to be moved into driving engagement with the pulley by a wedge 46. This clutch is operated by a hand lever 48 to start and stop the machine.

A heel embracing band 52 is fastened to a chain which, at the rear, see Fig. 2, has a stud projecting into a recess in the head 5 where it is secured by a binding screw 54. At its front ends the band is supported by chain arms 55 having forwardly directed inner ends and which are fulcrumed on slide bars 56. The chain arms or levers are connected at their outer ends by links 58 with a pivoted cross-bar 60 on the end of the band closing rod 62. This rod is fastened at its rear end to a lever 64, see Fig. 1, fulcrumed at its right hand end and connected at its left hand end by a spring 65 with the stationary stand in which the driving shaft has its bearing. This spring pulls the operating rod 62 backwardly to open the band. Movement in the reverse direction for closing the band is effected by a slide rod 66, Fig. 1, which extends from the left hand end of the lever 64 to a chain 68 that runs over an idler to a treadle 70.

The slide bars 56, upon which the chain arms 55 are fulcrumed, are guided for endwise movement in the head 5 and each slide bar has on its outer edge, see Fig. 2, a wedge face or incline 75 which is held yieldingly by a spring plunger 76 against a stationary bearing face 78. This construction and arrangement provides that as forward movement of the links 58 is effected to close the band the slide bars will be forced forwardly and as they advance they will be wedged inwardly to shut the end portions of the band firmly against the sides of the last. The band is thus caused to clamp the upper materials, including the usual heel stiffener, firmly about the heel portion of the last and the band is so formed, as appears in Figs. 3 and 4, that hard pressure of the upper materials against the last is secured at the upper edge of the last over which they are to be bent by the wipers or lasting plates. A final hard band closing pressure may be obtained by adjustably limiting the forward movement of the slide bars, as by stop pins 79, and causing the last portion of the movement of the links 58 to be

expended in turning the outer ends of levers 55 forwardly and their inner, forwardly projecting ends inwardly. The levers thus act as toggles to compress the end portions of the band against the sides of the shoe near the front ends of the heel stiffener.

A support for the shoe comprises an upright bar 82 carried by a treadle lever 80 and having upon its upper end rails 84 that support a toe rest 85 and a heel rest 86 toward and from which the toe rest can be adjusted for different lengths of shoes. The heel rest carries a last pin 90 and has movement about a pivot 88 by means of a spring pressed plunger 89 to tip the toe end of the shoe firmly down upon the toe rest for holding the shoe in place on the support. A guide bracket 95 embraces the bar 82 and confines the shoe support against lateral movement and limits forward movement of the support relatively to the lasting devices from which it is moved to apply and to remove a shoe as will be readily understood. A spring 96 draws down the shoe support when the treadle is released. The illustrated arrangement provides that the shoe support will stand normally depressed and tipped away from the machine as far as the bracket 95 permits.

In the use of the machine a shoe will be applied to the support and then the support pushed back into the heel band and raised by the treadle 80. One of the wiper plates has a height gage 27 to limit the upward movement of the shoe. The heel band is then closed by depressing the treadle 70. Each of these treadles may have an edge plate to engage a locking ratchet, if desired, but in practice I contemplate that the operator will depress the treadle 80 with the heel portion of his foot and then force down the treadle 70 with the toe portion of the same foot and will maintain his foot upon the treadles during the brief period which is required for the heel seat lasting operation by this machine. The shoe having been jacked and clamped as described, the operator will engage the clutch controlling lever 48 and start the machine, causing the wipers to advance and close over the heel from their normal open position, Fig. 3, to the position shown in Figs. 1 and 4. The driving mechanisms will rapidly reciprocate the wipers repeatedly over the heel seat and back again while the upward pressure of the shoe against the wipers is controlled by the operator through the treadle 80 and the band closing pressure is controlled by the treadle 70. The first advance of the wipers may take place with the plane of the shoe bottom slightly below the lower face of the wipers, as shown in Fig. 3, to break down the heel stiffener and other upper materials and, then the shoe be raised, as indicated in Fig. 4, to

cause the wipers as they advance again to press the upper materials hard down upon the innersole. The height gage 27 prevents the shoe from being raised too high when the wipers are retracted. The overwiping operations of the wipers may be repeated as many times as, in the judgment of the operator, is required for the particular shoe in hand and the machine may then be stopped with the wipers partially backed off the shoe to uncover the tacking line and the upper may be tacked around the heel seat as usual by a hand tacker while the shoe remains in the machine. Alternatively the machine may be stopped with the wipers entirely backed off and the shoe, with the heel portion shaped to the sides and to the bottom face of the last, may be removed from the lasting machine and presented to a tacking machine for fastening the upper materials in lasted position.

Having explained the nature of this invention and described a preferred construction embodying the same, I claim as new and desire to secure by Letters Patent of the United States:—

1. An automatic end lasting machine having, in combination, end embracing wipers, power mechanism arranged for continuous operation at a predetermined rate of speed to impart repeated closing movements to said wipers, and shoe holding means constructed and arranged to present and hold the shoe continuously against lateral and longitudinal displacement in position to receive upon the same portion of the shoe materials repeated treatment by said wipers on successive movements thereof.

2. An automatic end lasting machine having, in combination, a support for a shoe, end embracing wipers for engaging and wiping over upon the innersole the upstanding margin of upper materials about the heel portion of the shoe at both sides simultaneously, power mechanism for operating said wipers repeatedly over the end and sides of the shoe heel, and means under control of the operator for starting and stopping said mechanism at will with the wipers in any position within their range of operative movement.

3. An automatic end lasting machine having, in combination, a support for a shoe, end embracing wipers, and power mechanism for operating said wipers repeatedly over the end and sides of the shoe heel, said machine comprising a connection between the wipers and the source of power permitting adjustment to vary the amplitude of reciprocation of the wipers.

4. An automatic heel seat lasting machine having, in combination, a support for the shoe, heel embracing wipers constructed to operate upon the upper materials at both sides of the heel seat simultaneously, power

operating mechanism, connections from said mechanism to the wipers to reciprocate them repeatedly forth and back over the heel seat, shoe holding means constructed and arranged to present and hold the shoe continuously against lateral and longitudinal displacement in position to receive upon the same portion of the shoe materials repeated treatment by said wipers on successive movements thereof, manual means to start and stop the reciprocation of the wipers, and manual means adapted for adjustment while the machine is running for variably controlling the relation of the plane of the wipers and the plane of the heel seat.

5. An automatic heel seat lasting machine having, in combination, a support for the shoe, heel embracing wipers for engaging and wiping over simultaneously the upstanding portions of upper at both sides of the heel portion of the shoe, power operating mechanism, connections from said mechanism to the wipers to reciprocate them forth and back over the heel seat repeatedly, and manual means for relatively moving the shoe support and the wiper perpendicularly to the plane of action of the wipers while the wipers are reciprocating.

6. An automatic heel seat lasting machine having, in combination, a support for the shoe, heel embracing wipers for engaging and wiping over simultaneously the upstanding portions of upper at both sides of the heel portion of the shoe, power operating mechanism, connections from said mechanism to the wipers to reciprocate them forth and back over the heel seat repeatedly, and a treadle lever connected with the shoe support arranged to enable the operator to apply powerful upward pressure through the shoe support to force the shoe against the wipers.

7. An automatic heel seat laster having, in combination, a last support, heel embracing wipers for engaging and wiping over simultaneously the upstanding portions of upper at both sides of the heel portion of the shoe, power operating mechanism, manually controlled means for connecting said mechanism with the wipers to reciprocate them over the heel seat repeatedly, a last support, a treadle lever connected with the last support by which the shoe may be held up to the wipers and the upward pressure increased as the operation progresses, and a height gage preventing the shoe from being raised too high while the wipers are retracted.

8. An automatic heel seat laster having, in combination, a last support, heel embracing wipers for engaging and wiping over simultaneously the upstanding portions of upper at both sides of the heel portion of the shoe, power operating mechanism, connections from the mechanism to said wipers

to reciprocate the wipers forth and back over the heel seat, a last support, a spring to lower the last support, a treadle connected to the last support to force the shoe up against the wipers, and a height gage carried by the wipers and preventing the shoe from being raised by the treadle pressure above the lower face of the wipers while they are retracted.

9. An automatic heel seat lasting machine having, in combination, heel seat wipers, a base having at its front end upstanding ears, a head pivoted between said ears and adjustably supported in the rear thereof to vary the longitudinal inclination of the wipers, a plate having a cylindrical stem having bearing in said head, means for adjusting said plate about the axis of said stem to change the transverse inclination of the wipers, means carried by said plate for guiding and controlling the reciprocatory movement of said wipers over the heel seat, power mechanism adapted for continuous operation, manual means for starting and stopping the operation of said mechanism, and connections from said mechanism to the wipers, said connections being constructed to effect repeated reciprocations of the wipers without interfering with said adjustments.

10. An automatic heel seat lasting machine having, in combination, heel seat wipers, a base having at its front end upstanding ears, a head pivoted between said ears and adjustably supported in the rear thereof to vary the longitudinal inclination of the wipers, a plate having a cylindrical stem having bearing in said head, means for adjusting said plate about the axis of said stem to change the transverse inclination of the wipers, means carried by said plate for guiding and controlling the reciprocatory movement of said wipers over the heel seat, an operating rod arranged concentrically in said stem and connected at its front end with the wipers, a driving shaft, a disk on said shaft, a link eccentrically connected with said disk and connected with said rod, power mechanism for actuating the driving shaft, and means under control of the operator for connecting and disconnecting said power mechanism from the driving shaft.

11. An automatic heel seat lasting machine having, in combination, heel seat lasting wipers, power driven mechanism arranged for continuous operation to reciprocate said wipers and close them a plurality of times over the heel seat to break down the same portion of the upper materials and to lay them in lasted position on the insole, a heel embracing band to clamp the upper materials around the last at and adjacent to the edge over which said materials are broken down by the wipers, and means for actuating said band to effect such

clamping of the work preparatory to starting the power mechanism for actuating the wipers, said band operating means being adapted for manual control during the continued operation of the power driven wipers.

12. An automatic heel seat lasting machine having, in combination, heel seat wipers having shaped edges extending over the heel seat from its rear end forwardly toward the shank, mechanism for actuating said wipers to break down the upper materials including the heel stiffener and to lay them in lasted position upon the insole, a heel embracing band formed to clamp the upper materials in advance of the operation of the wipers around the heel portion of a last adjacent to the edge over which the wipers bend the upper materials in breaking them down and laying them in lasted position, said band extending forwardly along the sides of the shoe toward the shank, levers having forwardly directed inner arms connected to the ends of the band, operating means acting forwardly upon the outer arms of the levers, slide bars upon which the levers are fulcrumed, guides for the slide bars, cooperating inclines formed on said slide bars and guides to displace said slide bars and thereby the levers and the band ends inwardly as the bars slide forwardly and manual means for opening and closing the band while the wiper operating means is running.

13. In an automatic heel seat lasting machine, an end embracing band, a chain encircling the band, chain arms having forwardly directed ends connected with the ends of the chain, slide bars on which said chain arms are fulcrumed, guideways in which the slide bars are movable endwise, cooperating relatively inclined faces formed on the slide bars and guides for wedging the chain arms inwardly as the slide bars advance, and operating means connected with the outer ends of the chain arms and acting therethrough to effect forward movement of the slide bars and inward pressure against the end portions of the band.

14. In an automatic heel seat lasting machine the combination with heel seat lasting wipers and operating mechanism for said wipers, of means for holding the shoe for the heel seat lasting operation; a heel embracing band to clamp the upper materials about the last in position to be overwiped by the wipers, a treadle and operating connections to the band for closing it about the last, and a last support and a treadle for raising the shoe against the wipers, said treadles being arranged in position to enable the operator to engage the shoe lifting treadle with the heel of the foot and the band closing treadle with the ball of the same foot, as and for the purpose described.

15. An end lasting machine having, in combination, end lasting wipers, means to actuate them, an end embracing band to hold the upper for the action of the wipers, and band closing means comprising levers having forwardly directed ends attached to the band, slide bars on which the levers are fulcrumed, actuators connected to the outer ends of the levers and stops to arrest the forwardly sliding movement of said bars and cause the levers to act as toggles for compressing the end portions of the band against the sides of the shoe.

16. In an automatic heel seat lasting machine, an end embracing band, a chain encircling the band, chain arms having forwardly directed ends connected with the ends of the chain, slide bars on which said chain arms are fulcrumed, and operating means including equalizing mechanism connected with the outer ends of the chain arms and acting therethrough to effect inward pressure against the end portions of the band.

17. An automatic end lasting machine having, in combination, end lasting wipers, guiding means for the wipers, power operating mechanism for advancing and closing the wipers a plurality of times over the same portion of the upper in lasting a single shoe, means for supporting the shoe continuously in position to receive upon the same portion of the upper repeated treatment by the wipers, and means under the control of the operator for changing the vertical position of the shoe with relation to the wipers without interrupting the reciprocation of the wipers, said manually controlled means being constructed to permit lowering of the shoe previous to the retraction of the wipers to relieve the drag of the wipers over the inwardly wiped stock.

18. An automatic end lasting machine having, in combination, end lasting wipers, means for guiding the wipers to close and advance over the shoe bottom and to open and retract therefrom, continuously running power operating mechanism with which the wipers are connected, and manually controlled shoe supporting and heel band clamping mechanism by which a shoe may be presented for the operation thereon of the wipers and withdrawn when the operation has been carried out to the satisfaction of the attendant.

19. All automatic end lasting machine having, in combination, end lasting wipers, means for guiding the wipers to close and advance over the shoe bottom and to open and retract therefrom, continuously running power operating mechanism with which the wipers are connected, an end embracing band, means connected with the end portions of the band to cause it to clamp the upper materials about the end of the last and hold them for the operation of the wipers over the shoe bottom, and manually controlled shoe supporting mechanism by which the shoe may be presented for the operation thereon of the band and the wipers and withdrawn when the operation has been carried out to the satisfaction of the attendant.

20. An automatic end lasting machine having, in combination, end embracing wipers, power operating means connected with said wipers and adapted for continuous operation to advance and close the wipers repeatedly on a shoe end, and a shoe support movably mounted in operative relation to said wipers and adapted to receive a shoe in a position away from the wipers and to carry the shoe into the field of operation of the wipers and hold it in said field continuously during the repeated operations of the wipers.

21. An automatic end lasting machine having, in combination, end embracing wipers, power operating means connected with said wipers and adapted for continuous operation to advance and close the wipers repeatedly on a shoe end, a shoe support movably mounted in operative relation to said wipers and adapted to receive a shoe in a position away from the wipers and to carry the shoe into the field of operation of the wipers and hold it in said field continuously during the repeated operations of the wipers, and manually controlled means for manipulating the support during the continuous operation of the wipers to vary and determine the action of the wipers on the shoe during their successive operative movements.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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Witnesses:

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E. A. STIGGINS.
WORK SUPPORT.
APPLICATION FILED APR. 22, 1911.

1,132,630.

Patented Mar. 23, 1915.

3 SHEETS-SHEET 1.

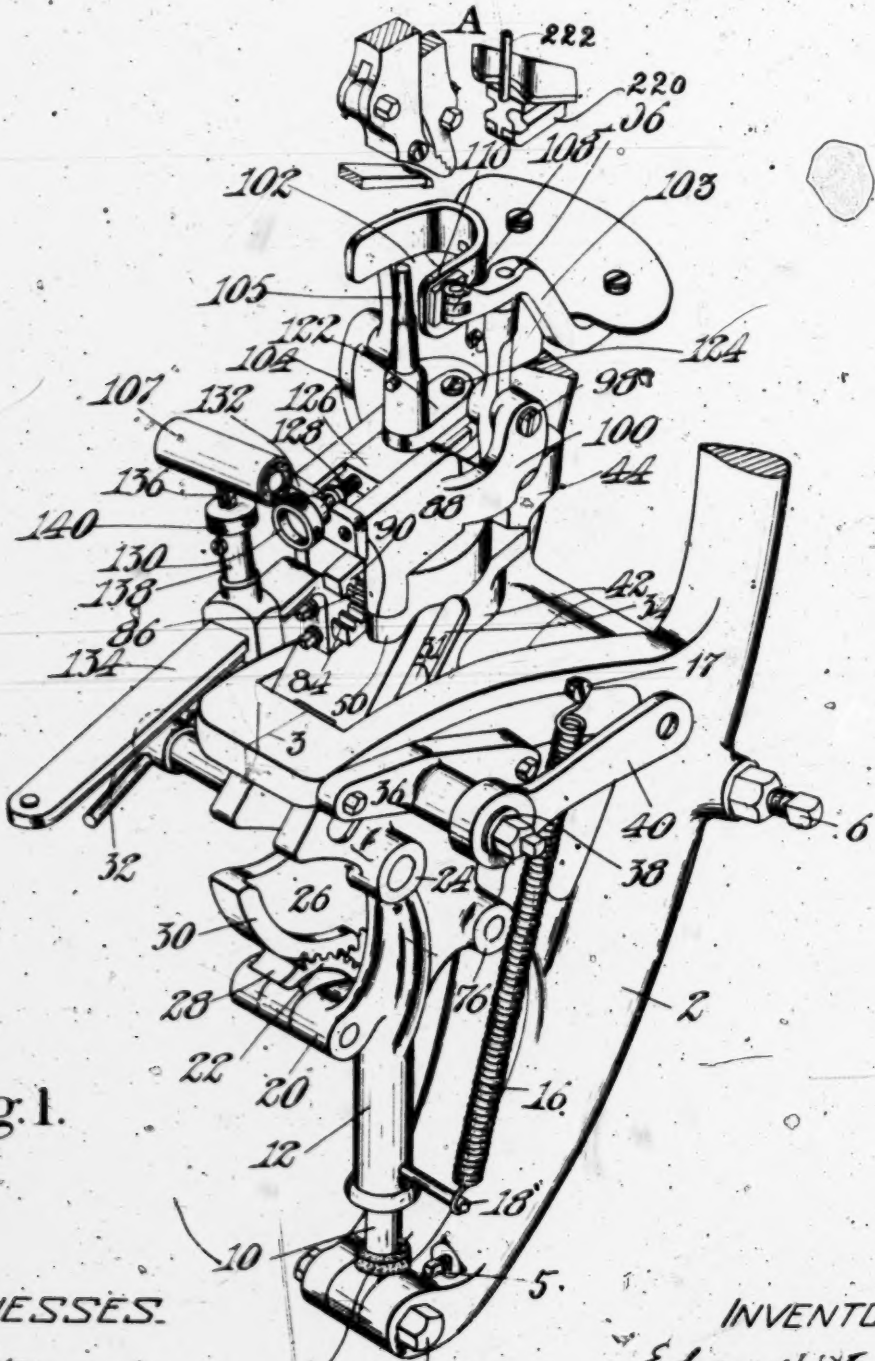


Fig. 1.

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3 SHEETS—SHEET 2.

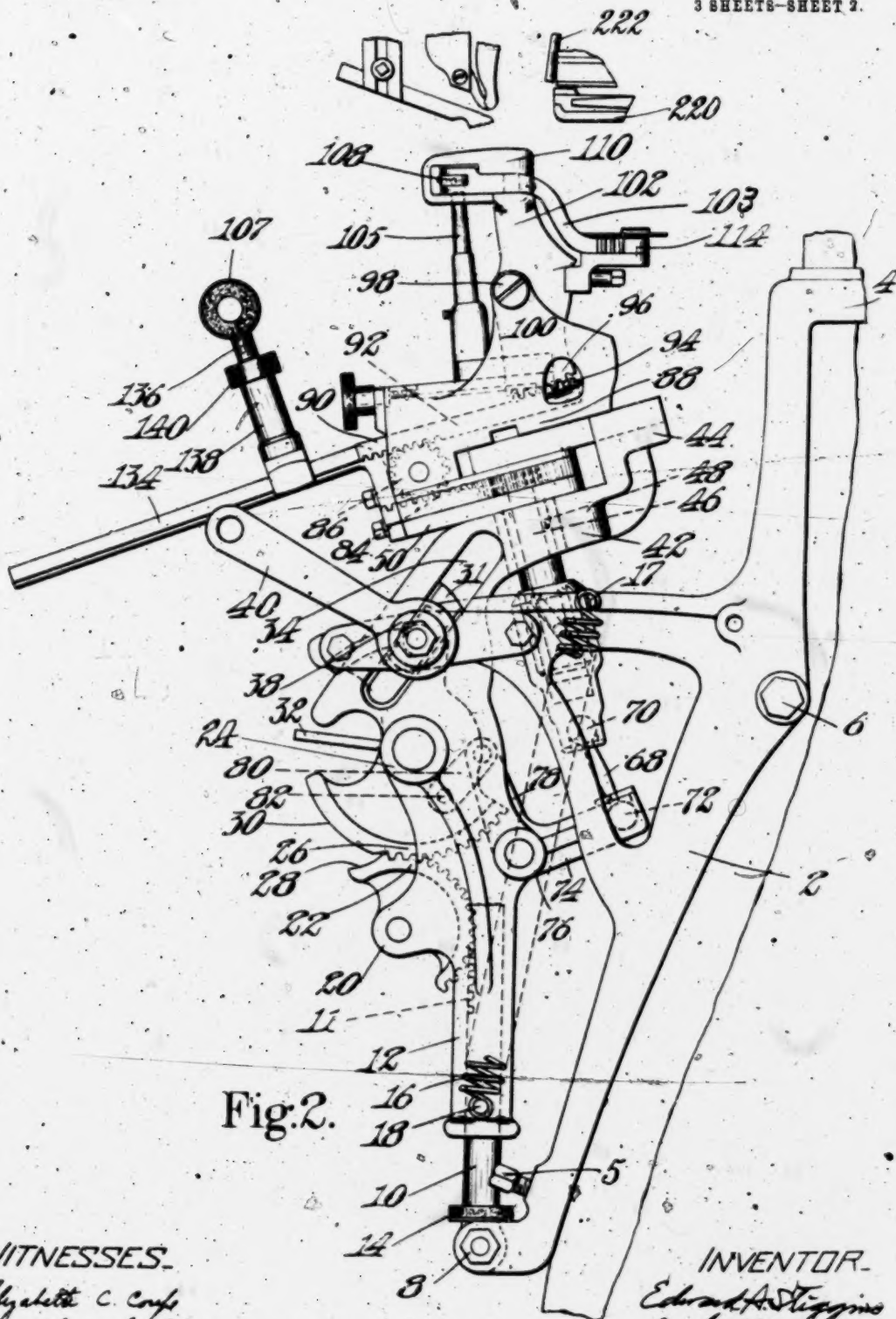


Fig. 2.

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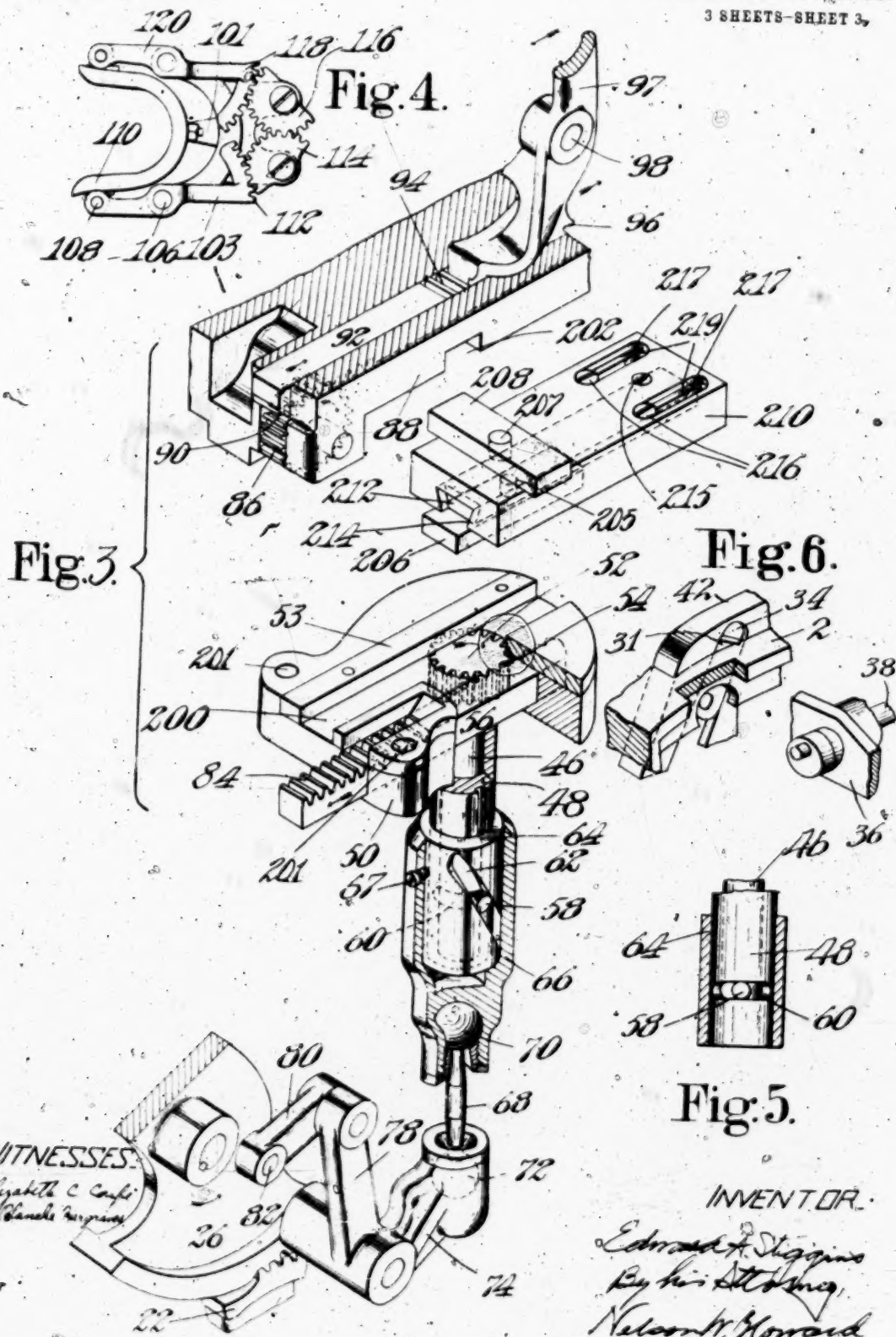
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1,132,630.

Patented Mar. 23, 1915.

3 SHEETS-SHEET 3.



UNITED STATES PATENT OFFICE.

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WORK-SUPPORT.

1,132,630.

Specification of Letters Patent.

Patented Mar. 23, 1915.

Application filed April 22, 1911. Serial No. 622,756.

To all whom it may concern:

Be it known that I, EDWARD A. STIGGINS, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Work-Supports, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to work supports for shoe machines and is herein shown as embodied in a work support or a jack designed particularly with reference to holding a last and the parts of a shoe in position for the performance thereon of the operation of heel seat lasting by a machine of the hand method type. It is to be understood, however, that mechanism involving the invention is by no means limited to such use, but may be applied to jacks for holding shoes in proper position to be operated upon by various machines for treating the heel or the heel-seat portion of the shoe, such, for example, as slugging machines, snailing machines, trimming machines, breasting machines, and the like.

In lasting the heel-seats of shoes upon machines of the hand method type it is the present general practice for the operator to hold the shoe in his hands with its bottom against a downwardly projecting rest and with the side of the heel portion pressed laterally against a rest which is wide enough to form a firm abutment. The work being so held, the machine acts to wipe in the upper material, which includes the flange of a molded or unmolded heel stiffener, and to drive a tack through it and the insole, clenching the same upon the nail plate of the last. When this cycle of operations is completed, the operator slides the shoe along the edge rest at the same time rotating it an amount corresponding to the curvature of the portion being acted upon, and the operation of wiping in and tacking is repeated by the machine. In this procedure, the spacing of the tacks from the edge of the last is determined by the position of the edge rest relatively to the driver, while the spacing between the tacks is determined en-

tirely by the judgment and skill of the operator.

An object of the present invention is to hold a shoe securely and present the same in proper relation to a wiping and tacking mechanism, so that the tacks will be properly located about the heel-seat independently of the usual edge rest or of any great skill or attention on the part of the operator, the operation required being merely the placing of the shoe upon the jack spindle, the raising of it into position, and the swinging of the shoe slowly about the jack spindle through a portion of a revolution, the mechanism provided acting to locate the heel-seat properly beneath the wiping and driving mechanism and to so guide its movement relatively thereto that the tacks will be driven along a predetermined path which, in the form of the invention shown and described, is substantially in the form of a portion of an ellipse and corresponds very closely to the outline of the heel or heel-seat of an ordinary shoe. The operator has only to rotate the shoe by slight intermittent movements about the last pin after each cycle of operations of the machine in order to space the tacks properly from each other, this movement requiring no particular skill or attention on the part of the operator.

An important feature of the invention relates to the means employed for securing a movement of the shoe support such that a relatively stationary operating mechanism or tool will trace a predetermined path relatively to the heel or heel-seat of a shoe carried by said support. In the construction shown and later to be described in detail, this path is elliptical in form and the movement of the shoe support is effected by mounting the shoe support for movement upon a relatively stationary carrier and providing, between the support and the carrier, mechanism such that when the support is given a rotative movement relatively to the carrier a point on the heel or heel-seat of the shoe on the support will trace an elliptical path relatively to a stationary point. The mechanism provided for this purpose involves broadly the principle of the well-known trammel for drawing

ellipses, slots at right angles to each other being formed in the parts of the carrier and a member corresponding to the pencil-carrying arm of theammel being provided with pins at one end engaging the slots through sliding blocks and having its other end fixed to a portion of the carrier which is stationary relatively to the shoe support. The fixed end is, however, arranged for adjustment for changing the size of the ellipse generated by a point on the heel-seat and means is provided for adjusting the position of the pins relatively to each other in order that the ellipticity of the movement given to the shoe may be varied. When the pins are in line with each other, the movement will be circular, and as they are displaced more and more out of line, the path of movement becomes elliptical with an increasing degree of eccentricity.

Another feature of the present invention is embodied in the means for raising the jack carrier upwardly and at the same time forcing it backwardly to position the shoe properly beneath the operating devices and in the means for locking the carrier and jack in place when this position is reached. For effecting the vertical movement, a segment gear journaled on the carrier is provided which meshes with a rack pivoted at its lower end to a part stationary on the base of the machine, and a second segment gear also journaled on the carrier meshes with the segment gear first mentioned and is provided with a hand lever for rotating it to cause the first mentioned segment gear to climb the rack and elevate the carrier. The rearward, or oscillating, movement of the jack carrier which takes place simultaneously with its upward movement is effected by inclined guiding slots formed in the carrier and engaging projections on the relatively stationary base. For effecting the locking of the jack in its raised position, the segments are provided with smooth or untoothed portions, one concave and the other convex, which interengage as soon as the jack is raised to the proper height and lock the same in raised position until the hand lever is again operated.

Another important feature of the invention involves the mechanism for closing the shoe clasp or heel band upon the shoe and for effecting this operation simultaneously with the movement of the jack into raised position. From the toothed segment above referred to, which is provided with a hand lever, motion is communicated by suitable mechanism to the heel band to force the same forwardly against the back of the heel portion of the shoe. As pressure is applied by the heel band to the back of the shoe, the forward portion of the heel band, which is connected through the mechanism referred to with the hand operated segment, tends to

move inward against the shoe and this inward motion is communicated through suitable mechanism to the end of the heel band at the opposite side of the shoe so that both sides are pressed in against the heel portion simultaneously.

Another feature of the invention is embodied in means for giving the jack a slight movement or sensitive adjustment toward and from the machine independently of the movements described. This consists of a shaft mounted in a stationary portion of the jack base and carrying an eccentrically mounted pin arranged to communicate its movement to the jack carrier so that rotation of the shaft will move the jack slightly in and out to position the heel-seat accurately with respect to the tacking mechanism.

As another feature of the invention, the last pin is mounted for movement laterally of the longitudinal axis of the last carried thereby so as to permit the shoe clasp or heel band, as it closes, to center the heel-seat of the last relatively to the heel band and to the mechanism for operating upon the heel-seat. As disclosed, this result is effected by mounting the last pin upon a block which is pivoted to the jack base at a point to the rear of the last pin.

Another feature of my invention is involved in the manner of mounting the toe rest for adjustment relatively to the last pin for effecting a vertical movement of the toe rest simultaneously with its adjustment longitudinally of its support. This result is effected by arranging the member along which the support of the toe rest slides at an obtuse angle to the axis of the last pin, so that as the toe rest is moved nearer to the last pin to accommodate smaller shoes it will, at the same time, be raised vertically to compensate for the diminished thickness of the toe portion of the smaller shoe.

The foregoing and other features of the invention will appear more fully from the following description and drawings, in which—

Figure 1 is a perspective view of an illustrative embodiment of the invention and the associated parts of a lasting machine of the hand method type, a full description and illustration of which may be found in United States Letters Patent No. 584,744; Fig. 2 is a side elevation of the same; Fig. 3 is a detail, with the parts displaced vertically of a portion of the means for tightening the heel band about the heel and producing elliptical movement of the heel-seat; Fig. 4 is a plan view of the heel band and its closing mechanism; Fig. 5 is a detail of a portion of Fig. 3. Fig. 6 is a fragmentary detail of the fine adjustment mechanism.

Referring to Fig. 1, the character 2 indicates a base which, for convenience, is made

in separate parts joined at 3 and is detachably connected to the pedestal of the lasting machine by a collar 4 (Fig. 2) and clamping screws 6. When the clamping screws 6 are loosened, the lower end of the base 2 may be adjusted toward and from the pedestal by means of a screw 5 and the screws 6 then set up to hold the base in fixed position. Pivoted to the bottom of the base 2 by a bolt 8 is a rod 10 having a rack 11, Fig. 2, formed on its front side. Upon this rod slides a hollow standard 12 which forms the lower part of what may be termed the jack carrier, as distinguished from the jack proper which supports the shoe and is turned with it. On the rod below the standard is a washer 14 of suitable material to act as a buffer and the weight of the jack is partially counterbalanced by a spring 16 fast at one end to a screw 17 on the base 2 and at the other end to a pin 18 secured to the standard 12.

Journalled in bosses 20 extending forwardly from the standard 12 is a toothed segment 22 which meshes with the rack 11 on the rod 10. On the jack carrier above the bosses 20 are bosses 24 in which is journaled a toothed segment 26 which meshes with the segment 22. The segment 26 is provided with an untoothed or smooth face 30 which, after the toothed portion has ceased to engage with the toothed portion of the segment 22, interengages with a smooth concave face 28 on the segment 22 and automatically locks it against further rotation. The journal of the segment 26 is extended to the left and provided with an operating lever 32. A portion of the jack carrier integral with the boss 24 extends upwardly at an angle to the vertical and is provided with an oblique guiding slot 34. A plate 36 is bolted to the base and carries a stud shaft 33 having at one end a handle 40 and at the other a pin eccentrically attached thereto and engaging a slide 31 mounted in the slot 34 of the jack carrier.

The operation of the device as thus far described is as follows: Movement of the hand lever 32 turns the segment 26 and hence the segment 22 which, being in engagement with the rack 11, causes the segment 22 to climb the rack and raise the jack carrier upon the rod 10, this movement being assisted by the spring 16 until the smooth faces 28 and 30 engage and the jack carrier is automatically locked in raised position. Meantime the portion of the jack carrier having the oblique guiding slot 34 moves over the slide 31 and the jack carrier as a whole is oscillated about the pivot 8 and forced backwardly toward the lasting machine, this movement being due to the inclination of the slot. A finer adjustment of the jack toward and from the machine (see Figs. 1 and 6) may be effected by manipula-

tion of the handle 40 which rotates a shaft 38 and, through an eccentric pin engaging the slide 31, gives the jack carrier and jack a slight oscillatory movement about the pivot 8 to furnish a fine adjustment for the work backward and forward under the lasting mechanism.

Above the portion of the jack carrier in which the inclined slot 34 is formed is a jack seat portion 42 having at its rear end an upstanding portion 44. Upon the portion 42 is seated the lower plate 50 of the jack proper. A shaft 46, Fig. 3, passes through a sleeve 48 stationary with the plate 50 and carries a pinion 52 fixed upon it. For assembling the pinion 52 in its socket in the plate 50 the groove 200 is made larger than is necessary, and after the pinion is in place is partially filled by a strip 53 secured therein which serves to hold the pinion in assembled position. The pinion 52 meshes with the rack 54 on a bar 56 and is actuated by rotation of the shaft 46 as follows: A pin 58 fixed in the shaft 46 projects through a horizontal slot 60 in the sleeve 48, Fig. 5, and engages the inclined slot 62 in the sleeve 64, Fig. 3. The sleeve 64 is splined on the sleeve 48 which is fast on the plate 50. By this means the sleeve 64 is prevented from rotating and when given longitudinal movement the action of the inclined slot upon the pin 58 is to rotate the shaft 46 and pinion 52. An outer sleeve 66 is secured by a screw 67 upon the sleeve 64 and is connected by a bar 68 and ball and socket joints 70 and 72 with one arm 74 of a bell-crank lever which is fulcrumed in bosses 76 on the standard 12. The other arm 78 of the bell-crank is connected by a link 80 with a wrist pin 82 on the segment 26. From an inspection of Fig. 3 it will now be clear that upon rotation of the segment 26 in a counter-clockwise direction, as indicated by the arrow, to raise and lock the jack the bell-crank will be operated to pull down on the connecting bar 68 and the sleeves 66 and 64 whereby the pinion 52 is rotated in a clockwise direction and the rock bar 56 is moved to the left or away from the lasting machine.

An upwardly facing toothed portion 84 of the rack bar 56 engages a pinion 86 journaled in a member 88 and the pinion in turn engages a downwardly facing toothed portion 90 of a rack bar 92. The opposite end of the bar 92 has an upwardly facing toothed portion 94 which engages a toothed segment 96 on one arm of a lever 97 fulcrumed at 98 on a bracket 100, Fig. 1, of the member 88. The upper portion 102 of the lever is substantially semi-cylindrical and extends around to a bracket 101, corresponding to the bracket 100, in which it has a fulcrum corresponding to that at 98. A shoe clasp or heel band 110 is attached at the mid-

5 dle of its bent portion by a flexible connection 101, Fig. 4, to the semi-cylindrical portion 102 of the lever 97 and is, by movement of the rack bars, pinions and lever described, pressed against the heel of a shoe, the heel portion of the last of which is supported upon a spindle 105 and the toe portion upon a vertically and horizontally-adjustable toe rest 107, Fig. 1. The forcing
 10 of the heel band closely against the side of the heel portion of the shoe is accomplished by further movement of the lever 97 in the same direction. A lever 103 is pivoted to the lever 97 at 106 and to one end of the heel band at 108. It will now be apparent
 15 that, as the rear portion of the heel band is held practically stationary by its contact with the shoe, movement of the lever 97 forward will tend to rock the lever 103 on its pivot 106 and force the end 110, Fig. 1, of the heel band toward the shoe. This motion should, of course, be communicated to the corresponding end of the heel band on the other side of the shoe. This is accomplished by the mechanism shown in Fig. 4.
 20 The lever 103 carries a segment rack 112 which meshes with a segment pinion 114 engaging a similar segment pinion 116. The segment pinion 116 in turn engages a toothed segment 118 on a lever 120 corresponding to the lever 103. In this way it will be apparent that the two ends of the heel band are made to move simultaneously inward to the same extent and thereby
 25 closely embrace the heel portion of the shoe.

30 The means for giving a point on the heel seat of the jacked shoe an elliptical movement comprises the slot 200, Fig. 3, in the base 50 and a slot 202 at right angles to it. These slots are slidingly engaged respectively by blocks 206, 208, pivoted on opposite sides of a block 210 by pins 205, 207 respectively. The end of the block 210 is seated in the upstanding portion 44 of the jack carrier 42, and is provided with slots
 40 217 having about their upper peripheries shoulders 219 which engage the heads of screws 216 for holding the block 210 against upward displacement and permitting longitudinal adjustment of the block and the jack relatively to the support 42. In order that the ellipticity of the movement of the heel may be varied, the block 206 instead of being pivoted directly to the block 210 is pivoted
 45 to a slide 212 adjustable longitudinally in a dove-tailed slot 214 and normally held in place by a screw 215. The plates 50 and 88 are rigidly secured together by screws passing through holes 201 in the plate 50 into threaded holes (not shown) in the plate 88, the plate 210 having free movement with respect to the plates 50 and 88 except as restricted by the blocks 206, 208 in the slots
 50 200 and 202, respectively.

55 The elliptical movement produced by the

mechanism just described will perhaps be best understood if it is considered first what will take place if the block 210 is free to move while the plates 50 and 88 are held stationary. Suppose a point is taken on the
 70 slotted end of the plate 210 and the plate is swung around over a stationary plane, all the other jack parts being stationary, it will be apparent that the action of the pins 205, 207, the blocks 206, 208 and the slots 200
 75 and 202 at right angles to each other will be to constrain the point to trace an ellipse upon the stationary plane, the action being similar to that of the ordinary ellipsograph or trammel for drawing ellipses. If now
 80 we hold the plate 210 stationary, as it is in practice, being clamped by screws 216 which pass through slots 217 into the upstanding portion 44, and move the plates 50 and 88
 85 with the jack thereon it will be seen that a stationary point, for instance, the driver of the lasting machine, will trace an ellipse upon a plane supported on the jack and swung around with it, or upon the heel-seat of a shoe held by the last pin 105 and the
 90 heel band 110.

The shoe is supported upon the jack by a spindle 105, Fig. 1, and a toe rest 107, the spindle is attached to a block 122 which is pivoted by a screw 124 to a slide 126 in
 95 which is threaded a screw 128 having a thumb nut 130 and journaled in a plate 132. By this means the shoe may be adjusted to and from the heel band and is permitted by movement of the block 122 about its pivot
 100 124 to center itself therein. The toe rest slides upon a member 134 which is bolted to the jack member 50 and serves as a lever for turning the shoe beneath the heel-seat lasting mechanism indicated at A, Fig. 1. The
 105 toe rest is vertically adjustable by means of a screw 136 splined to a stem 138 and threaded through a thumb nut 140.

It will be observed from Fig. 2 that the member 134 upon which the toe rest is
 110 mounted for sliding adjustment is inclined downwardly and makes an obtuse angle with the last pin so that as the toe rest is moved nearer the last pin to accommodate a smaller shoe it will be raised, due to the inclination
 115 of the member 134, and is thus automatically adjusted vertically to compensate for the diminished thickness of the toe portion of the smaller shoe. Accordingly, only the finer adjustments have to be taken care
 120 of by the thumb nut 140 and screw 136.

The operation of the device as a whole may now be briefly reviewed. The operator places the last carrying the assembled insole and upper upon the spindle 105 and
 125 rests the toe of the shoe upon the rest 107. He then depresses the lever 32 which first, through the rack 11 and segments 22 and 26, raises the jack and shoe toward the lasting devices at A, Fig. 1. At the same time the
 130

inclined slot 34 carries the shoe back under the lasting devices. After reaching the limit of vertical and lateral movement due to the instrumentalities noted the smooth portions 28 and 30 of the segments interengage and the jack is locked in position. Should some slight further movement be necessary, due, for instance, to the varying characteristics of individual shoes, the lever 40 may be manipulated to give a slight to-and-fro movement to the jack.

During the upward movement of the jack and after the segment 22 becomes locked, motion is transmitted from the segment 26 through the link 80, bell crank 74, bar 68 to the sleeves 66, 64 to move them downwardly and by means of the pin 58 and slot 62 this motion is transmitted into rotary motion of the shaft 46 and pinion 52. Thence through rack 84, pinion 86 and rack 92 the lever 97 is oscillated and the heel band clamped about the heel as described. The shoe is now firmly held in proper position beneath the lasting device. The shoe is first swung around (say to the left) to bring one end of the heel band adjacent to the lasting mechanism and the lasting machine started. The tack block 220 wipes a portion of the upper in over the heel-seat and the driver 222 drives a tack through it to tack it down. Between this cycle of operations of the lasting machine and the next, while the tack block is withdrawn, the shoe is swung slightly to the right to present a new portion of the upper to the wiping action of the tack block and to enable the tacking mechanism to drive another tack somewhat displaced from the first along the periphery of the heel-seat or heel. As the operation proceeds, the tacks are driven along an elliptical path, (due to the elliptical movement described). The shape of the heel-seat of a shoe approximates so closely to a portion of an ellipse that by giving the heel-seat a truly elliptical motion beneath the tack driver the tacks are arranged at a substantially constant distance from the edge of the heel about the heel-seat. By this device, a comparatively unskilled workman may accurately perform the operation of heel-seat lasting, it being only necessary for him to set the shoe upon the jack, operate the lever 32 (and possibly lever 40), start the machine and swing the shoe around with what is substantially a continuous motion, interrupted only by the brief dwells of the tack block and driving mechanism upon the shoe.

Having described one mechanical embodiment of my inventive idea and explained the mode of operating the same, without limiting myself to any specific mechanical means which may be variously modified without departing from my invention, what I claim as new and desire to

secure by Letters Patent of the United States is:—

1. A jack for heel-seat lasting comprising shoe supporting devices, a carrier therefor, manually operable means for raising the carrier, means for compelling backward movement of the shoe supporting devices during the upward movement of the carrier, and means for locking the jack in operative position by the same movement.

2. A jack for heel-seat lasting comprising shoe supporting devices, a carrier therefor, operating means comprising interengaging segment racks for raising the supporting devices, and means comprising oblique pin and slot guiding means to compel rearward movement of the shoe as it is lifted.

3. A jack for heel-seat lasting comprising shoe supporting devices, a carrier therefor, operating means comprising a rack, a hand lever, connections operated by the hand lever to cause the carrier to climb the rack, a pivotal connection between the shoe supporting devices and the carrier, and means to rock the devices and the shoe thereon automatically toward the machine as it is raised.

4. A jack for heel-seat lasting comprising shoe supporting devices, a carrier therefor, operating means for raising the carrier, and means for compelling backward movement of the shoe supporting devices during the upward movement of said jack having means formed with the raising means for automatically locking the supporting devices in their raised and posterior position.

5. A jack for heel-seat lasting comprising shoe supporting devices, a carrier therefor, and operating means comprising interengaging segment racks for raising the supporting devices, said segment racks having smooth portions at the ends of the toothed portions to effect locking of the supporting devices in upraised position.

6. A jack for heel-seat lasting comprising shoe supporting devices, a carrier therefor, operating means comprising interengaging segment racks for raising the supporting devices, said segment racks having smooth portions at the ends of the toothed portions to effect locking of the supporting devices in upraised position, and means for making final adjustment of the shoe after such locking.

7. A heel-seat lasting jack comprising shoe supporting means, a carrier therefor, a base with relation to which the carrier is movable to transfer the supporting means from shoe receiving position to heel-seat lasting position, and unitary mechanism which can be operated to effect such movement and will automatically lock the shoe against displacement when the lasting position is reached.

8. A heel-seat lasting jack comprising

shoe supporting means, a carrier therefor, a base with relation to which the carrier is movable to transfer the supporting means to shoe receiving and heel-seat lasting position, and segmental racks for effecting said movement, said racks having interengaging smooth portions cooperating at the end of the movement to lock the carrier.

9. A heel-seat lasting jack comprising shoe supporting means, a carrier therefor, a base with relation to which the carrier is movable to transfer the supporting means to shoe receiving and heel-seat lasting position, and cooperating segmental racks and oblique guiding slots to effect and direct said movement, the racks having smooth locking portions making engagement at the end of the movement to lock the shoe in position to be operated upon.

10. Apparatus of the class described having, in combination, hand lever operated means for guiding and directing movement of a shoe from position of presentation to position to be worked upon, and means also operated by said lever for effecting the locking of said means with the shoe in the latter position.

11. Apparatus of the class described having, in combination, means for guiding and directing movement of a shoe from position of presentation to position to be worked upon, and operating mechanism therefor comprising cooperating toothed segmental racks having portions other than the teeth which interengage to lock the said means automatically with the shoe in the latter position.

12. A jack having, in combination, shoe holding devices, means for raising the jack, and means actuated by the raising means for automatically actuating the holding devices relatively to the shoe therein, said holding devices being mounted for movement in the plane of the heel seat.

13. A jack having, in combination, shoe holding devices including a heel clasp, and means for effecting vertical bodily movement of the holding devices and the shoe together, said means operating also for closing the clasp about the shoe and being mounted for rotation about a vertical axis.

14. A jack having, in combination, shoe holding devices, a carrier therefor, means for effecting movement of the carrier to transfer the shoe from position of presentation to position for operation upon the shoe, connections for actuating the shoe holding devices relatively to the shoe to clamp the shoe by the said means, and means permitting rotation of the shoe in a horizontal plane.

15. A jack having, in combination, shoe holding devices, including a shoe clasp, a carrier for said devices, an actuator, connec-

tions therefrom to move the carrier and the shoe thereon bodily and for closing the clasp, and means whereby the clamped shoe may be swung about a vertical axis.

16. A jack having, in combination, shoe holding devices, a carrier, means for actuating the carrier to move the shoe from a position of presentation to a position for the heel-seat to be lasted and to lock the carrier against displacement from the latter position, and guiding means insuring movement of the shoe in an elliptical path when the shoe is turned to present successive portions progressively for the heel-seat lasting operation.

17. A jack having in combination, supporting means, a heel post having a normally fixed position with respect to the direction of the length of the shoe and relatively to said supporting means, and a toe rest mounted for adjustment lengthwise of the jack and independently of the heel post for long and short shoes, the direction of such adjustment being at an obtuse angle to the longitudinal axis of the heel post.

18. A jack having, in combination, a heel post, a carrier therefor upon which the post is adjustable in the direction of the longitudinal axis of the shoe, a toe rest, and a support for the rest that is connected with said carrier and extends in a direction downwardly and outwardly to the direction of the post and along which the toe rest is adjustable independently of the heel post for short and long shoes.

19. A jack having, in combination, a heel post pivotally mounted for lateral movement about an axis displaced longitudinally of the jack from the post, and a heel clamp mounted in fixed lateral position and symmetrically actuated and with relation to which the shoe is positioned by the movable heel post.

20. In a device of the class described, means for movably supporting a last, means for clamping the heel portion of a shoe upon the last, and means acting as the last is moved to so constrain said movement that the point of operation of the tool will be transferred about the heel seat of the last in an elliptical path.

21. In a device of the class described, a last spindle, a toe rest, a heel clamp, said parts being mounted for rotation about an axis lying substantially in the direction of the last spindle, and means acting when said parts are rotated to cause movement of the last spindle in an elliptical path.

22. In a device of the class described, a rotatably mounted shoe jack, and means for effecting movement of the axis of said jack in an elliptical path as the jack is rotated.

23. In a device of the class described, a shoe jack, and means adapted to be manu-

ally operated for raising said jack toward the operating mechanism and simultaneously moving the same backwardly under the operating mechanism, said means acting subsequently to lock said jack in position.

24. A device of the class described, comprising a last spindle, a heel band, manually operable means to raise said parts into operative relation to a shoe machine and to close said heel band upon a shoe, and means becoming effective through continued operation of said manual means to lock the heel band in closed position on the shoe.

25. In a device of the class described, a jack for supporting a shoe involving a last spindle, a heel band, means for positioning the jack in operative relation to a shoe machine, means actuated from said positioning means to close the heel band, and means for locking the jack in position operated by further movement of said positioning means.

26. A device of the class described, comprising a jack mechanism mounted for oscillation about a pivot below the same and extending transversely thereof and also mounted for vertical movement, and means acting to raise and simultaneously oscillate said jack, said means acting by further movement thereof to lock the jack in position when the limit of the simultaneous actions is reached.

27. A device of the class described, comprising a last pin, a heel band, a frame supporting the same, said frame being mounted for oscillation about a pivot below the same and for vertical movement relatively to said pivot, and manually operable means acting simultaneously to raise said frame, to oscillate the same upon its pivot and to close said heel band upon the shoe and acting subsequently to lock said parts from further movement.

28. A device of the class described, comprising a frame, a movably mounted shoe support thereon, a heel band for embracing the heel portion of a shoe upon said shoe support, means for raising the said frame and simultaneously moving the same backwardly into operative relation beneath the shoe machine, means for closing said heel band, means for locking said positioning means and said heel band in position, and means constraining a point on said shoe support to movement in an elliptical path.

29. In a device of the class described, a frame, a shoe support mounted thereon, means for positioning and locking said support in operative relation to a shoe machine, and additional means for further adjusting said shoe support in position.

30. In a device of the class described, a shoe support, a frame upon which said support is mounted, said frame being mounted for oscillation forwardly and backwardly

and for vertical movement, means for moving said frame upwardly and about said pivot simultaneously to position the same, and additional means for producing slight movements of the frame about said pivot for adjusting said position accurately.

31. In a device of the class described, a jack support, a lower plate pivoted to said support and having a slot in its upper face, an upper plate provided with a slot in its lower face at right angles to the slot in said lower plate, a block located between said plates and provided with pivoted means upon its upper and lower faces adapted to engage the slots in said upper and lower plates respectively, means for securing said plates together, and means for securing one end of said block upon said support.

32. In a device of the class described, a jack support, a lower plate pivoted to said support and having a slot in its upper face, an upper plate provided with a slot in its lower face at right angles to the slot in said lower plate, a block located between said plates and provided with pivoted means upon its upper and lower faces adapted to engage the slots in said upper and lower plates respectively, means for adjusting one of said pivots longitudinally of the block, means for securing said plates together, and means for securing one end of said block upon said support.

33. In a device of the class described, a support, plates secured together, spaced apart for a portion of their length and provided in said portion respectively with grooves at right angles to each other, a block fitted between said spaced apart portions and provided with means engaging said grooves and pivoted to said block, and means for holding said block stationary with respect to said plates.

34. In a device of the class described, a jack for supporting a shoe involving a last spindle, a heel band, means for positioning the jack in operative relation to a shoe machine, and means operated by further movement of said positioning means for locking the jack.

35. In a jack for shoes the combination of a band, levers arranged longitudinally of the shoe and connected to the ends of said band and to each other for equal and opposite movement, and means connected to one of said levers for forcing that lever lengthwise of the shoe and toward the toe to close the band upon the shoe.

36. A device of the class described having, in combination, a heel pin, a band for embracing the heel portion of a shoe, band closing levers substantially parallel to the shoe bottom connected to said band and to each other for equal and opposite movement, an operating lever connected to one

of said closing levers, and means for applying power to the operating lever to close the band upon the shoe by movement of the band closing levers toward the toe of the shoe.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

EDWARD A. STIGGINS.

Witnesses:

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.
APPLICATION FILED JUNE 30, 1908.

1,135,945.

Patented Apr. 13, 1915.

6 SHEETS—SHEET 1.

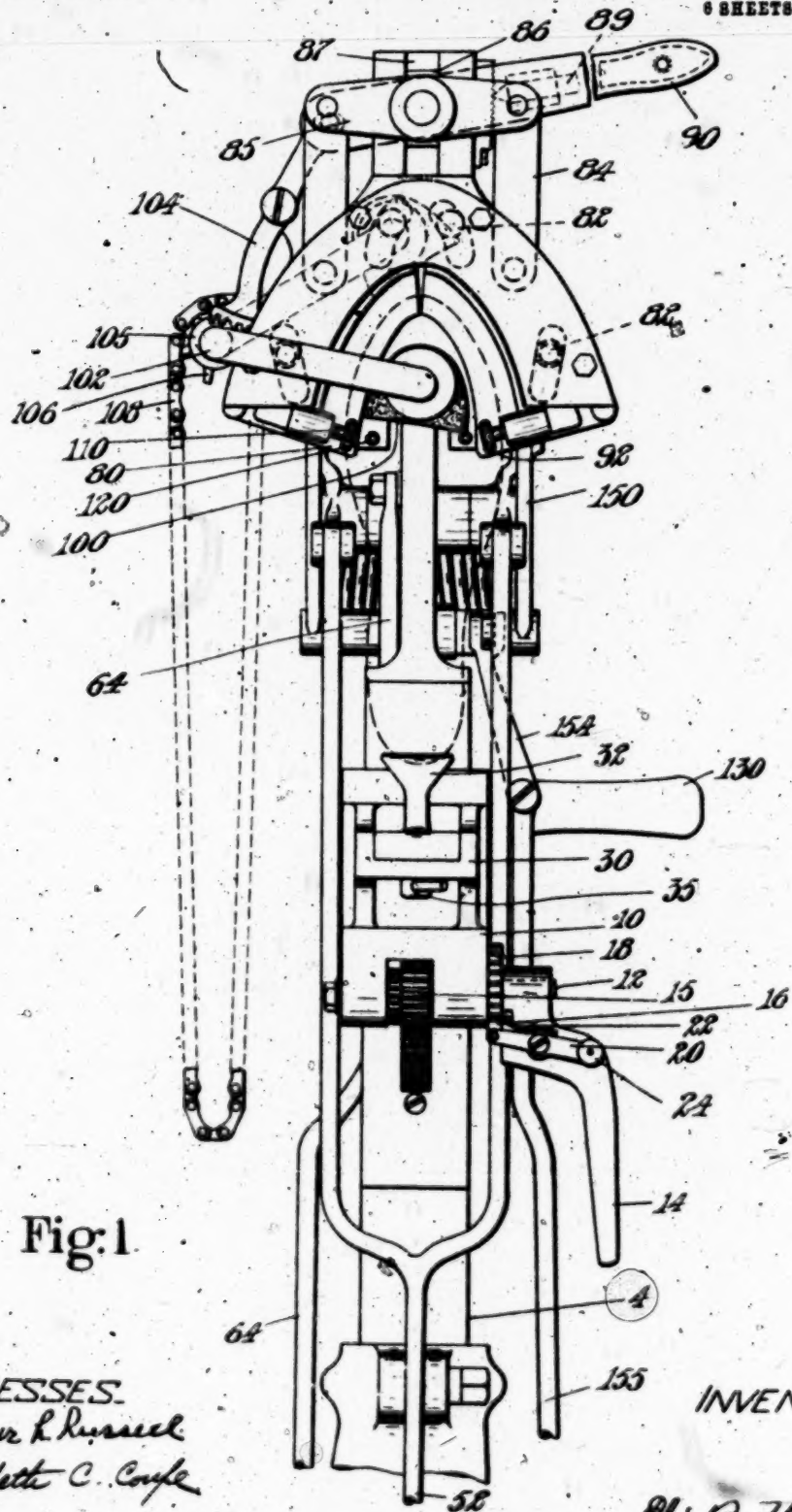


Fig. 1

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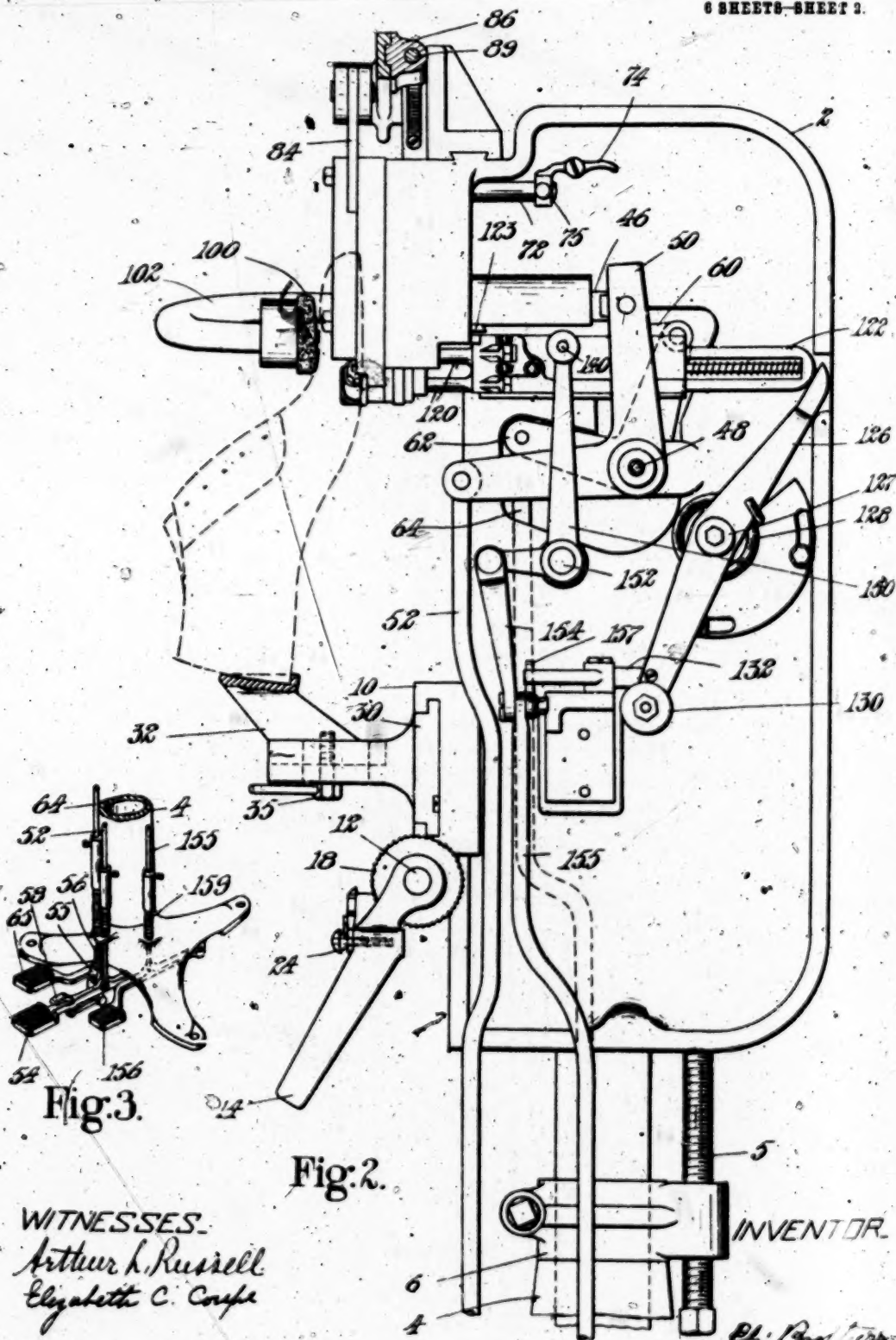
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

APPLICATION FILED JUNE 30, 1908.

1,135,945.

Patented Apr. 13, 1915.

6 SHEETS—SHEET 2.



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6 SHEETS-SHEET 3.

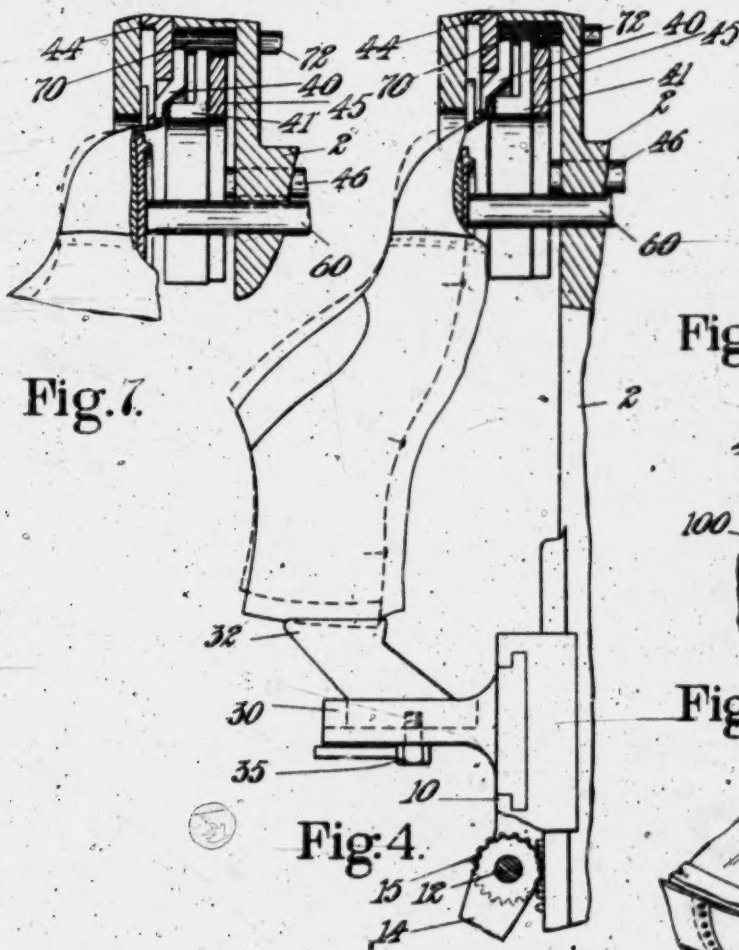


Fig. 7.

Fig. 4.

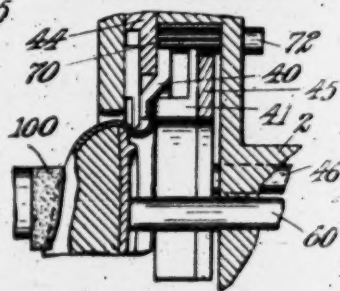


Fig. 8.

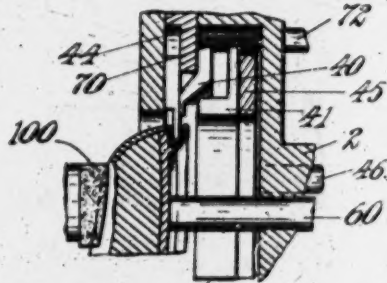


Fig. 9.

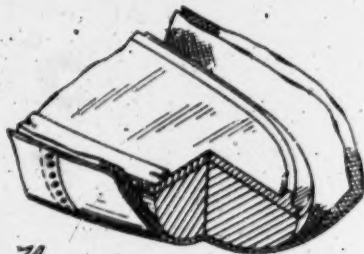


Fig. 5.

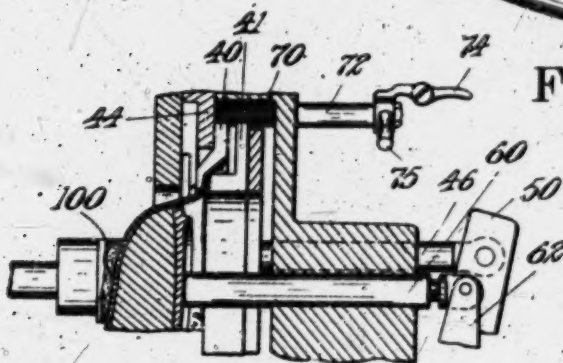


Fig. 6.

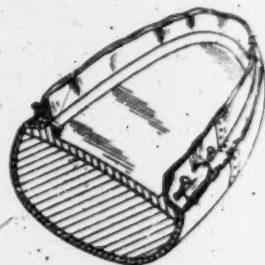


Fig. 10.

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6 SHEETS-SHEET 4.

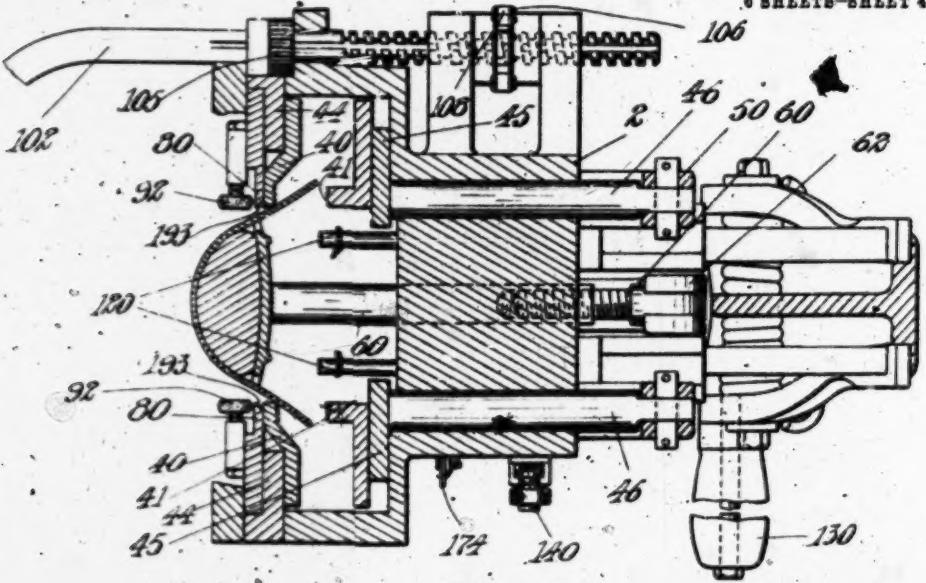


Fig. 11.

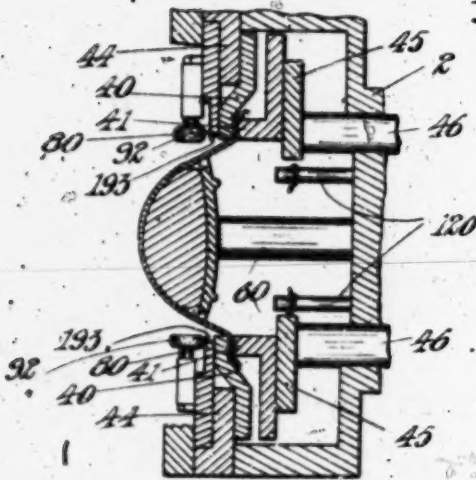


Fig. 12.

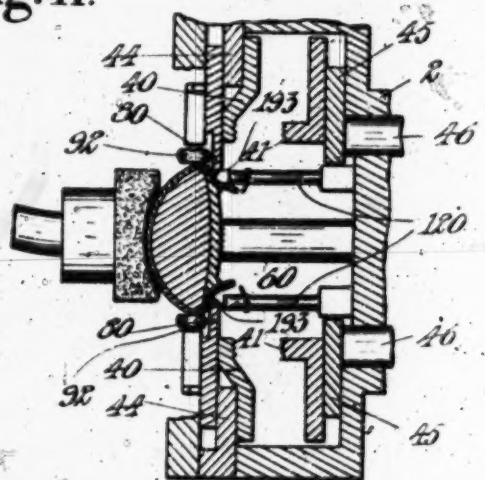


Fig. 13.

Fig. 4.

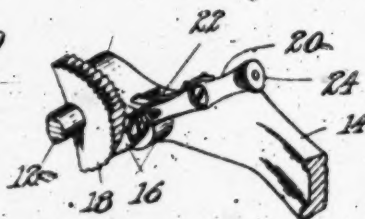
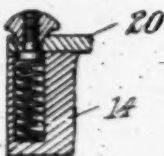


Fig. 15.

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6 SHEETS—SHEET 5.

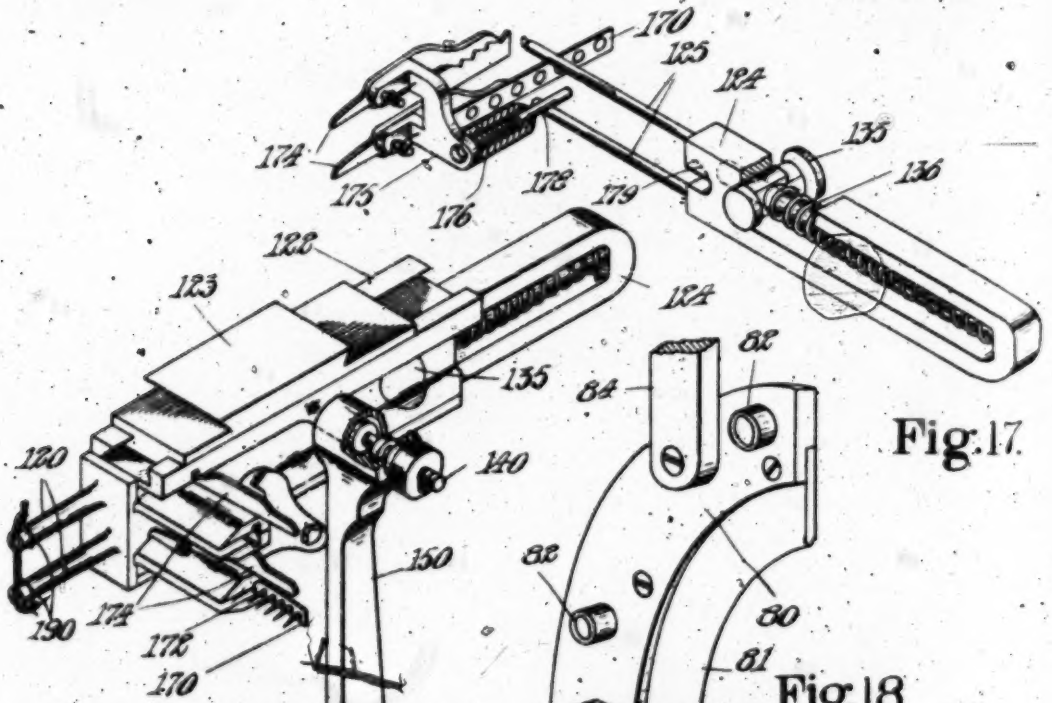


Fig. 16.

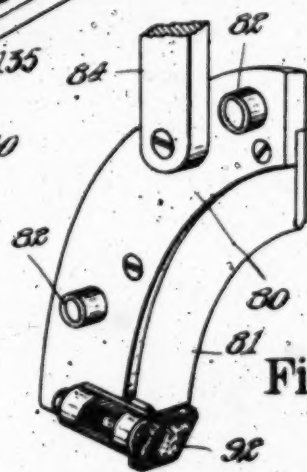


Fig. 18.

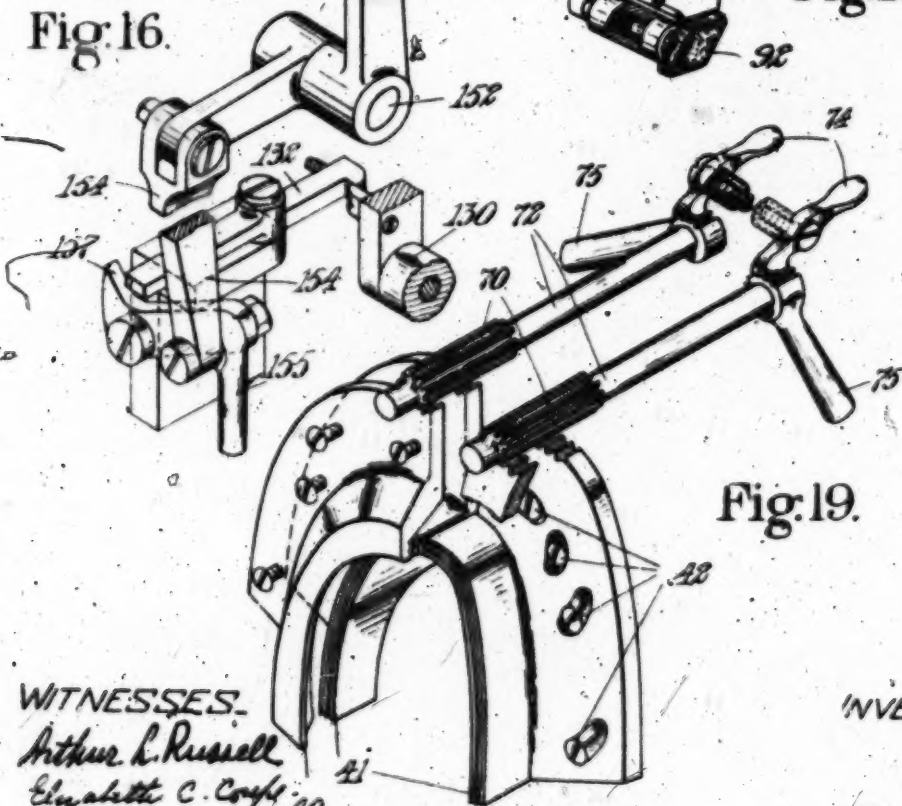


Fig. 19.

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 APPLICATION FILED JUNE 30, 1908.

1,135,945.

Patented Apr. 13, 1915.
 6 SHEETS—SHEET 6.

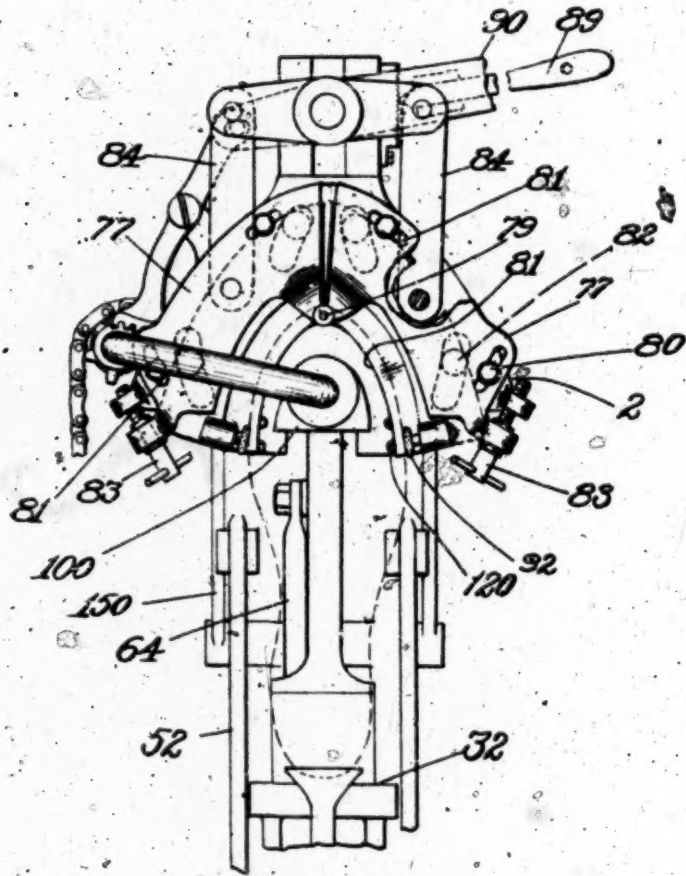


Fig. 20..

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UNITED STATES PATENT OFFICE.

ELI BROTHERS, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,135,945.

Specification of Letters Patent.

Patented Apr. 13, 1915.

Continuation of application Serial No. 330,610, filed June 7, 1906. This application filed June 30, 1908. Serial No. 441,126.

To all whom it may concern:

Be it known that I, ELI BROTHERS, a citizen of the United States, residing at Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Machines for Use in the Manufacture of Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for working uppers over lasts and has for its general object to provide a machine by which in successive operations a shoe upper may be "pulled-over" or drawn into preliminary position and adjusted on the last and then "lasted" or finally conformed to the shape of the last, and this application is a continuation of an application for Letters Patent of the United States for pulling-over and lasting machines, Serial No. 320,610, filed June 7, 1906, so far as said two applications disclose common subject-matter.

It has heretofore been the practice to pull-over a shoe by hand or by a pulling-over machine and thereafter to last the shoe in a lasting machine. The present invention combines in one machine provision for pulling-over the shoe and provision for lasting the shoe.

This invention has the advantage of reducing the number of machines or independent operations required for the manufacture of a shoe, thus economizing time and factory space and saving at least one handling of the shoe.

Another advantage of this invention is that the lasting of the shoe may be performed immediately after the pulling-over operation and it is, therefore, unnecessary to secure the upper by temporary fastenings for holding it between the pulling-over and lasting operations as has heretofore been necessary.

The invention has numerous other advantages which will be understood by those familiar with the manufacture of shoes, some of which advantages will be hereinafter pointed out.

As I am advised it is new with me to provide a machine in which a shoe upper and a last can be relatively moved to stretch the upper and to adjust it with its lines—as, for example, the toe tip seam—in desired

relation to the last and which is provided with means for lasting the shoe.

One important feature of this invention consists in novel mechanism for pulling-over a shoe, comprising means for gripping the upper at opposite sides of the last and means, for relatively actuating the gripping means and the last to pull the upper, said mechanism having provision for allowing relative movement of the last and upper to adjust the last with relation to the upper. As herein shown the last is rested against an abutment about which the last may be moved as a fulcrum or pivot for adjusting it with relation to the upper held by the grippers. In the illustrated embodiment of the invention the machine is constructed and arranged to present unobstructed space about the bottom and sides of the last to allow for movement of the last. This construction permits the last to be turned about an axis extending in the direction of the thickness of the last. This adjustment may be useful for straightening the last and toe tip seam relatively. The last may also be turned about an axis extending lengthwise of the shoe. By this means the relative pull on the two sides of the upper may be varied or the last may be shifted rotatively in the upper for positioning the last transversely with relation to the median line or lace opening of the upper. A further adjustment of the last may be made by tipping the last about an axis extending transversely of the last bottom. In this way the upper may be tightened or slackened as to its longitudinal strain over the top of the last. In addition to these movements the last may be adjusted lengthwise in the upper—as, for instance, to position the toe tip seam and the end of the last relatively. In practice it is important that the toe tip seam of each shoe of a pair of shoes be located at the same distance from the end of the shoe and it is the custom of hand workmen in pulling-over shoes to apply a measuring instrument to each shoe and then to pull the uppers longitudinally until each tip seam is in the same position.

In accordance with a feature of this invention the machine is provided with a heel engaging member and with manually operated means for actuating it to move the last longitudinally with relation to the

grippers which hold the upper whereby lengthwise adjustment of the last and upper relatively can be effected. Preferably the grippers are constructed and arranged to hold the upper away from the sides and edges of the last whereby the last can be moved more readily under or with relation to the upper. As herein shown, the grippers engage the upper at the end and at opposite sides of the forward portion of the last and are formed with substantially continuous curved jaws for receiving the edge of the forward portion of the upper from one side around the toe end to the other side. The curvature of the gripper jaws is preferably greater than that of the end of the last so that the jaws are adapted to receive in its normal outstanding or flaring position the marginal portion or edge of an upper loosely applied to the forward portion of a last.

These features of the invention are believed to have great advantages in a machine of this class, particularly in facilitating the making of the shoe without forming wrinkles in the upper.

A valuable characteristic of the preferred construction of the machine is that the several parts of the mechanism are arranged to permit to the operator an unobstructed view of the top and preferably also the side faces of the shoe so that he may be aware, as the operation proceeds, of the fit and position of the upper upon the last and may tip or rock the last as may be required to correct any defects that may be observed in fit of the upper or make any adjustments that may be required. As shown the abutment for the last is the part which is actuated while the grippers have no movement to pull the upper. This abutment is manually moved as herein illustrated and this gives opportunity for the adjustments of the upper and last to be made while the pulling is being effected if desired and before the maximum pulling tension is applied to the upper. This arrangement for manual relative actuation of the abutment and the grippers to pull the upper also permits the tension on the upper to be relaxed to reduce the frictional engagement of the upper materials with the last and facilitate the adjustment of the last in the upper.

A further feature of this invention consists in forming in sections gripper jaws which together are shaped and arranged to adapt them to the curvature of the last. As herein shown, the jaws are formed in right and left sections which can be adapted to the shape of the last whereby wide and narrow lasts can be provided for and also crooked lasts in which the shapes of the two sides of the forward portion of the shoe differ from one another in the right and left lasts. The sectional jaws may be made

readily removable so that one or both can at any time be replaced by another of different shape, but preferably and in accordance with a further feature of this invention which is believed to be of much importance in machines of this class the jaws are shiftable to adapt them to the contour of the last over which the upper is to be pulled and preferably the jaws are operatively connected with means by which they can be readily adjusted. The adjustment of the jaws or sections having opposed gripping faces may well be effected simultaneously and advantageously the adjustment of the sections at opposite sides of the shoe will be separately effected so that the jaws may be adapted to right and left crooked lasts. As herein shown, the jaws are secured on their carriers by pin and curved slot connections, the slots being formed to predetermine the direction of the movement of the jaws when they are adjusted in the illustrated construction to insure that the sections turn about an axis located substantially in the gripping faces so that a substantially continuous gripping face will be maintained by the several sections in their different adjustments. The jaws are shown as having toothed outer edges that are engaged by pinions on adjusting shafts and locking means is provided for securing the parts in their adjusted positions. The movable jaws or sections slide on the pinions in their opening and closing movements to grip and release the upper.

A further feature of the invention consists in the novel construction and relative arrangement of the mechanism for lasting the shoe after it has been pulled over. While in its broadest aspect, the invention is not limited to any particular form or arrangement of devices for lasting the shoe, as herein shown there are employed for this purpose wipers connected with actuating mechanism by which they are advanced lengthwise of the last and simultaneously closed inwardly from the opposite sides of the last to lay the upper over the last bottom. For sustaining the last against the pressure of the wipers a rest is provided which is movable longitudinally of the shoe from a position above and out of operative relation with the shoe. The top face of a shoe adjacent to its toe end is somewhat sloping and the rest is preferably arranged for movement along this sloping face until it comes into firm bearing with the shoe. By this arrangement the rest automatically adjusts itself into position for supporting against the pressure of the wipers shoes of slightly different thickness. The same end would of course be gained if the rest were movable in a guideway inclined to the plane in which the shoe stands. As herein shown, provision is made for actuating the rest

perpendicularly to the plane of the shoe bottom to force the shoe backward against the wipers for pressing the overlaid upper into place against the innersole.

5 A further broad feature of this invention consists in the coöperative relation which exists between the upper seizing and holding means and the wipers. This means is shown as comprising a member over which the marginal edge of the upper can be outspread and upon which the upper can be held by the other member to maintain the upper free from wrinkles while the wipers move under the holding means to lay the upper smoothly over the last bottom. These members, herein illustrated as curved sectional gripper jaws and frequently referred to as "jaws" for the purpose of designation without any intention to imply a limitation as to their construction, form means independent of the wipers for holding the upper at the toe outspread while the wipers advance and close. The action of the jaws in so holding the edge of the upper outspread and under tension prevents the formation of wrinkles while the wipers lay the upper over the last bottom. As shown in the accompanying drawings the upper gripping and holding jaws are substantially co-extensive with the wipers and they hold the upper outspread at the sides of the toe adjacent to the ends of the wipers and the tip seam, as well as around the end of the toe. The efficiency of the end portions of the wipers in lasting the upper tightly at the sides of the toe is greatly increased by holding the upper from slipping freely during the closing of the jaws at the sides of the toe. Advantageously the combination operates to hold the upper away from the side faces of the last near the edge of the last bottom while the upper is being stretched and until it is folded or wrapped across the edge of the sole. It is contemplated that while the wipers are being closed the upper holding pressure on the upper will be relaxed sufficiently to allow its edges to be pulled under tension from the jaws. The provision herein described for adjustment of the upper holding jaws enables them to be used in coöperation with wipers of varying shapes in lasting wide and narrow shoes or right and left crooked shoes.

The lasted upper may be secured in overworked position in any suitable manner and as herein shown means is provided for inserting tacks. These tacks may be driven at appropriate distances apart for holding the upper in lasted position, but preferably in machines designed for operating on welt shoes two tacks only will be driven at each side of the last and the wipers will form in the overworked upper material forced against the usual rib of the welt innersole an angular seat or crease to receive a wire, tape,

or the like by which the upper between the tacks will be bound in lasted position.

These and other features of the invention, including certain details of construction and combinations of parts, will be hereinafter described and pointed out in the claims, but the improvements in methods of making shoes herein disclosed is claimed in a divisional application Ser. No. 851,194, filed July 15, 1914.

Figure 1 is a front elevation of a machine embodying the present invention. Fig. 2 is a side elevation. Fig. 3 is a perspective view of the lower portion of the machine showing the arrangement of treadles. Fig. 4 is a side elevation, partly in vertical section, showing the relative position of the parts when the upper has been gripped and pulled to some extent. The dotted lines indicate positions to which the shoe may be moved for varying the relative strains on different portions of the upper and adjusting the last and the upper relatively. Fig. 5 is a perspective view showing the forward portion of the upper loosely applied to the last and illustrating the normal outstanding relation of the upper to the side faces of the last. Figs. 6, 7, 8, and 9 show successive stages in the operation of pulling the upper, relatively adjusting the upper and the last, and working the whole upper over the last bottom into lasted position. Fig. 10 shows the forward portion of a shoe which has been pulled over and lasted by the machine. Fig. 11 shows a horizontal section through the machine and illustrates a shoe in position for the upper to be gripped. Fig. 12 shows the grippers closed and the abutment advanced to force the last forwardly and stretch the upper between the last and the grippers. Fig. 13 shows the wipers advanced to lay the upper over the last bottom, the grippers being open. This figure also shows the tack tubes advanced into position for the driving of the tacks. Figs. 14 and 15 are details of a pawl-controlling device. Fig. 16 is a perspective view of the tacking mechanism located at one side of the shoe. Fig. 17 is a perspective view of some of the parts shown in Fig. 16, other parts being omitted. Fig. 18 is a perspective view of one of the wipers and its associated parts, including the side clamp which is carried by the wiper. Fig. 19 is a perspective view of the grippers and their adjusting mechanism. Fig. 20 illustrates the application of a binder of continuous material for holding the upper in lasted position.

The machine comprises a head 2 which has a depending stem that extends into a post or base 4. A screw 5 working in a clamp 6 gives provision for adjusting the head to position the operating devices at a convenient height for the workman to see

the shoe for ascertaining the relation of the different parts of the upper to the last as the operation progresses. The clamp 6 may be tightened for securing the head in adjusted position. The head has on its front face an upright guide having a slide 10 in which is a shaft 12 having a hand lever 14 and a pinion 15 that engages a rack formed on the front face of the head whereby the height of the slide can be adjusted. A pawl 16 on the hand lever engages a fixed ratchet 18 to lock the lever and the pawl has a connection with a finger bar 20 which is pivoted to the hand lever 14 and acted upon by a spring 22. For manipulating the finger bar 20 a spring-pressed plunger is mounted in the lever 14 and has a tapering head 24 movable between the inclined walls of the finger bar so that when the head is depressed it turns the finger bar in the direction to lift the pawl from the ratchet. A block 30 is mounted for transverse movement in the slide 10 and carries the shoe rest 32, which in turn is mounted on a block 25 for adjustment from and toward the machine. The rest is formed to receive the heel end of a shoe presented upright or toe upward, as shown in Fig. 2, and is arranged to support the shoe at a sufficient distance outward from the head of the machine to permit the workman to have a substantially unobstructed view of the sides as well as the top face of the shoe and also to be able to see the shoe bottom to a considerable extent if occasion requires. The adjustment of the rest inwardly and outwardly provides for properly positioning lasts of different shape—as, for example, lasts having more or less spring—and a handled clamping screw 35 is arranged to lock the rest in its adjusted position. The several arrangements for shifting the position of the rest permit it to be adjusted for differences in swing as well as spring of lasts so that the forward portion of different lasts may be presented in substantially the same relation to the devices for operating on the shoe which occupy a fixed or constant position in the machine.

The devices that operate on the shoe comprise gripper jaws 40, 40, 41, 41 adapted to grip the upper at the end and at the opposite sides of the forward portion of the last. The jaws are formed in accordance with the contour of the marginal portion of the upper as the latter applied loosely to the last, flares outwardly from the side faces of the last, as shown in Fig. 5. The lower sectional jaw 40, 40 has a formed edge, Fig. 19, conforming substantially to the outline of the toe of the shoe to be lasted and is mounted at the rear or upper side of the wiper so that when the shoe is placed in the machine the outwardly flared marginal portion of the upper will be spread over

it in position to be gripped against the formed edge of the jaw by the cooperating member, which is the jaw 41, 41. The upper is thus gripped and held independently of the wiper plates 80, later described, and their movement is not resisted by the pressure of the holding member 41, 41. It is to be noted that the jaw 40 does not move with the closing-in movement of the wiper plates, nor with their advancing movement, over the edge of the sole and therefore the edge of the upper is held outspread throughout the lasting operation and is prevented from wrinkling. These jaws are preferably formed in sections (as shown best in Fig. 19) which are arranged for relative adjustment to adapt the grippers for lasts of different widths or different shapes. The jaws 40 are shown as mounted by pin and curved slot connections 42 on a fixed portion 44 of the head. The jaws 41 are held by similar pin and curved slot connections to the movable plates 45, which are the heads of rods 46 through which the jaws 41 are actuated to seize and release the upper. The rods 46 are joined to the upper arms of bell cranks 50 which are fulcrumed at 48 on the head and are each pivoted to a forked upper end of a rod 52 that runs to a treadle 54. The treadle has a pawl 55 which engages a ratchet 56 on the post 4 and is actuated by a lever 58 arranged in the treadle to be engaged by the toe of the operator's foot resting on the treadle.

The jaws 40 are formed in transverse section or end elevation as shown in Figs. 4 and 11 with ribbed gripping faces on the marginal edge of the rear side and an outwardly flaring neck between the gripping face and the attaching portion for the purpose of accommodating the position of the outwardly flaring portion of the upper. The jaw 41 is angular in transverse view, as may be seen in said figures, with its gripping face on its forwardly projecting edge and presents a space to the neck of the cooperating jaw to facilitate the insertion of the upper preparatory to gripping it.

The relative movement of the grippers and the last for straining the upper is effected by forcing the last forwardly by an abutment or bottom rest 60, shown as a rod sliding in the machine head and connected at its rear end with a bell crank 62 that is joined by a rod 64 to a treadle 65. It is to be observed that the grippers receive the upper in its normal outwardly flared position so that no wrinkling or puckering of the edge of the upper is required for inserting it into the grippers. It will also be noted that in the illustrated construction the grippers make continuous engagement with the upper on the forward portion of the last from one side of the shoe around the toe end to the other side so that no wrinkle or fold

is permitted to form in the edge portion of the upper. The grippers hold the upper in its normal outwardly flaring position away from the side face of the last, as shown in Figs. 4 and 12, while it is strained over the top of the last to conform it to the irregular surface of the last with the least amount of friction and without opportunities for wrinkles to be started during the pulling-over operation. After the upper has been stretched or pulled or while it is being strained the last may be moved to effect proper relative adjustment of the last and upper for correctly positioning the upper with the lace opening or median line in the right location and with the toe tip seam or line straight and at the right distance from the toe end of the last. This adjustment is effected, as will be understood from the foregoing description of the machine, by moving the last with relation to the abutment. The sole-engaging end of the rest is so formed that the last may be easily rocked or turned sidewise about its lengthwise axis for shifting the last in the upper in a direction transverse to the last to locate the lace-opening, and said rest is also formed to permit the last to be turned upon its rest as a pivot, by swinging the heel laterally and thus turning the last within the upper for effecting a relative adjustment to straighten the toe tip seam. For accommodating these movements the bottom rest may advantageously have a single engaging face upon which the last may be easily moved. For relatively adjusting the last and upper lengthwise to position the tip seam at the desired distance from the toe end of the last or to stretch the upper lengthwise the last may be moved by the heel rest and its operating lever 14. By moving the last upwardly as indicated in dotted lines in Fig. 4 its toe portion is thrust into the gripped forward portion of the upper and while advancing stretches the upper lengthwise and conforms it tightly to the surfaces of the toe end of the last. The bottom rest may have a smooth face engaging the innersole to facilitate this adjustment of the last. For effecting the adjustment of the grippers which has been referred to these jaws are formed with teeth on their upper or outer edges, as shown in Fig. 19, and these teeth of each pair of jaws 40, 41 are engaged by one long pinion 70 formed on a shaft 72 which is rotatable in the head 2 and has an operating handle 75. The pinion permits the necessary sliding movement of the jaws 41 that is incident to their gripping and releasing action. The pins of the pin and curved slot connections 42 are preferably not set up tight, but permit the movement of the jaws by the shaft 72 at any time and the shaft has a ratchet that is engaged by a pawl 74 for locking the gripper jaws in their ad-

justed positions. The said curved slots are formed so that they compel the jaws in the adjusting movement to turn about a center which is located substantially at the point of contact of the jaws on one side with the jaws on the other side, whereby a substantially continuous gripping face is maintained in all adjustments of the jaws. It will be observed that the jaws on the two sides of the machine are independently adjustable so that they can be adapted to fit crooked lasts or lasts that have more swing on the right side of a right last and the left side of a left last than upon the opposite sides. The adjusting mechanism is so arranged that the jaws can be adjusted if desired after a shoe has been gripped.

The wipers 80 which represent, in the illustrated embodiment of the invention, the preferred means for forcing the upper into lasted position after it has been pulled over and adjusted upon the last are mounted in guideways in the front face of the machine head to which they are held by stud and slot connections 82, as indicated in Fig. 1. The wipers are connected by links 84 to an equalizing bar 85 pivoted on a block 86 that can slide vertically in the guideway 87 in the cap of the machine. The block is connected to a lever 90 provided with a spring pawl 89 adapted for engagement with a ratchet bar on the side of the cap for holding the lever and wipers in the positions to which they are moved and more particularly for maintaining the wipers in their raised position. The wipers have edge plates 81 which may be removably attached to the body portion of the wiper as shown in Fig. 18 so that they can be readily removed and replaced by others of different shape. In another construction shown in Fig. 20 the front plates 77, in which are located the slots of the pin and slot connections 82, are pivoted together at 79 at a point substantially concentric with the center of movement of the wipers and are connected to the head 2 by pin and curved slot connections at 811 the slots being formed concentric with the pivot 79. A screw 83 connects each of the plates 77 with the head, whereby said plates may be separately adjusted for positioning the wipers initially and independently of their operation by the hand lever 90. By this arrangement the wipers can be adjusted for shoes of different widths and can also be adjusted readily for right and left crooked lasts in the same manner as the grippers. The screws 83 have handle pins to facilitate their manipulation and enable the operator to adjust the wipers conveniently even after a shoe is in the machine and without the use of any machine tools. The wipers are actuated while the upper is held under tension by the jaws 40, 41, and in its normal, outwardly flaring position

where, as above stated, it is stretched without the formation of wrinkles. As the wipers close against the taut upper they force the upper over the edge of the last and innersole, as indicated in Figs. 8 and 9 and in Fig. 13, to the position in which it is shown in Fig. 10. In a shoe having a lip or shoulder on the face of the innersole, as in welt and turn shoes, the upper will be forced by the wipers into the angle between said lip or shoulder and the relatively thin feather edge of the innersole into position to be sewn to the lip or shoulder. As may be observed from Fig. 9, the wiper moves between the stationary jaw 40 of the grippers and the cover plate of the machine head and is braced by said stationary jaw to resist the pressure exerted on the last by the toe clamp. This arrangement insures that the wiper may be sufficiently rigid without making it of too great thickness to permit it to work advantageously between the grippers and the last. If the wiper were of greater thickness a greater length of upper material would be required in order that the upper should be securely seized by the grippers. The provision above described for adjusting the wiper plates permits them to be positioned so that they will seat the upper accurately into the angle between the lip and feather on shoes varying in width or shape and by adjusting the wiper plate on one side of the machine with relation to that on the other side the wipers may very quickly adapt themselves to the shape of right and left crooked lasts. While the wipers are closing the upper may be allowed to pull under tension from between the jaws of the grippers, which will be slightly released for this purpose, or the bottom rest may be gradually retracted so as to let the last approach the plane of the wipers to provide the length of upper required for bending it into lasted position over the innersole, or the necessary slack may be obtained both by retracting the abutment and by permitting the upper to pull from the grippers. In any case the upper is maintained under tension until it has become clamped between the wipers and the edge of the last and there is no opportunity offered during the pulling and lasting operation for the formation of wrinkles in portion of the upper that will be visible in the finished shoe. In the illustrated machine the operator manipulates the wipers manually as well as the bottom rest and the grippers so that the procedure may be varied and be suited to the conditions presented at different times and by different kinds of work. For example, if the upper is a short one it will usually be best to retract the bottom rest until the wiper clamps the upper rather than to allow the upper to pull from the grippers. The arrangement which permits the last to

be rocked and rolled relatively to the bottom rest and to the wipers enables the operator to position lasts of different shapes with their bottom faces in operative relation to the plane of the wipers. In Fig. 7 the dotted lines indicate a rocking movement of the last by which the toe end is placed outside the plane of the wipers.

In making shoes on some styles of lasts, particularly those which have a deep concave on their top face over the ball of the foot, one of the most difficult portions to fit properly to the last and work snugly into lasted position is the portion extending over the said concave part of the last. It is particularly difficult to wipe this portion into lasted position without permitting it to slip back. For the purpose of overcoming this difficulty the wipers are herein shown as provided with side clamps 92 yieldingly mounted and normally held in position to clamp the upper against the side and edge of the last at about the toe tip seam for holding the upper from slipping back while it is being wiped into position at this point. These side clamps yield backwardly with relation to the wipers as the latter advance so that the holding force of the clamps is increased as the grippers release the upper. It is contemplated that a binder of continuous material will be employed for holding the upper in lasted position about the forward portion of the last and in order to fasten the upper with increased security at the ball of the last where it is most likely to slip back anchor tacks for the binder and also preferably one or more other tacks are inserted at each side of the ball in the region of the side clamps. The tack-inserting mechanism will be described later.

Provision for further conforming the upper to the concave portion of the last over the ball of the foot is found in a toe rest or clamp 100 which may comprise a relatively large block of yielding material, such as rubber, adapted to engage the top face of the shoe and be forced against the shoe for pressing the upper into the concave of the last and clamping it firmly against the last after the upper has been partially or completely pulled. The toe rest occupies during the pulling-over and adjusting operations an inoperative relation where it does not obstruct the view of the shoe,—as for example, the dotted-line position shown in Fig. 1. The clamp is mounted on a bent shank 102 by which the movement from inoperative to operative position may be effected. For convenience the shank 102 has operative connection with the lever 90 through which the wipers are actuated. This connection is formed by a lever 104 connected at its upper end by a pin and slot with the lever 90 and at its lower end formed with teeth to engage a pinion 105

which is keyed to the shank 102. The pin and slot connection between the levers 104 and 90 permits the toe rest or clamp to be moved into operative position by a partial downward movement of the wipers so that if desired the clamp may be moved into operative position before the wipers force the upper over the last bottom or come into a position to interfere with further adjusting and pulling of the upper. The said pin and slot connection permits the wipers to be further advanced for forcing the upper into lasted position without necessarily disturbing the position of the toe rest. For backing the rest up to clamp the shoe the shank has a coarse screw thread, shown best in Fig. 11; which is engaged by a sprocket wheel 106 that is located between collars on the head 2 so that it can have no movement lengthwise of the shank 102 but compels the wheel to project the shank endwise when the wheel is rotated. For turning the wheel a suitably formed endless chain 108 is provided which extends within convenient reach of the operator, as shown in Fig. 1. This arrangement gives sufficient speed and power to enable the operator to force the rest back quickly and firmly for forcing the upper into the concave of the last face and clamping it against the last and the last in turn against the abutment 60. Other purposes served by the toe rest 100 are that of holding the last against forward displacement by the wipers as the latter crowd the upper inwardly over the innersole and that of forcing the last backwardly against the wipers after the latter have wiped the upper into lasted position. By thus forcing the last against the wipers the overlaid upper material may be firmly clamped and crimped into lasted position and any inequalities or irregularities in the portion of the upper overlying the feather of the innersole and between the lip and the edge of the shoe are well pressed out so that this portion of the upper is smooth and even and a well-defined edge is formed on the surface of the upper at the edge of the shoe.

The tack-driving mechanism heretofore briefly referred to is shown as comprising means for inserting four tacks, two being located on each side of the forward portion of the shoe and adapted to serve not only to fasten the upper at points of the greatest strain, but as anchor tacks for a binder by which the toe portion of the upper is held. Obviously a larger number of tacks might be driven and distributed about the entire forward portion of the shoe to secure the upper by tacks alone. The tack holders or nozzle 120 project from a tack block 122 that is shown best in Figs. 2 and 16 and receives a driver head 124 having driver bars 125. The driver head is engaged by the lever 126, see

Fig. 2, on the hub of which is a coil spring 128 through which power is derived to insert the tacks. The lever 126 has a handle 130 to actuate it for compressing the driver spring 128 and a latch 132 for holding the lever forward with the spring under tension.

In order that the nozzles 120 may occupy during the pulling-over and lasting operations a retracted position where they will be out of the way of the parts employed during those operations the entire tack block 122 is arranged for movement toward and from the plane of the shoe bottom. To this end the tack block has tongue and groove connection with a plate 123 which in turn has a tongue and groove connection with the head of the machine. This latter connection permits a movement of the tacking mechanism transversely of the machine which will later be referred to. The driver head is yieldingly connected to the tack block through a cross bolt 135 and a spring 136 located in a slot in the head, as shown in Figs. 16 and 17. The tack block also has connection with an angle lever 150 fulcrumed at 152 and connected by a link 154 and a rod 155 with a treadle 156. A swinging arm 157 is connected to the head of the rod 155 to be actuated thereby for engaging the tail of the latch 132 and swinging that latch away from the driver 126 to release that lever and permit the insertion of tacks to take place. After the tacks have been driven the operator, by means of the handle 130, turns the lever 126 for setting the driver spring and a spring 159 acting on the rod 155 raises that rod and the parts connected with it to turn the swinging arm 157 out of the path of the latch 132, which is actuated by a suitable spring into position to lock the driver lever 126. It is important to locate the tacks always in substantially the same relation to the edge of the shoe and for accommodating shoes of different widths there is an adjustable connection between the tack block 122 and the lever 150 by means of which the tacking mechanism may be shifted transversely of the machine, the block 123 sliding in the machine head. This adjustable connection is formed by a screw 140 confined by suitable collars against lengthwise movement in the lever and having threaded connection with the tack block as shown best in Fig. 16. The head of the lever 126 is wide enough so that the lever maintains engagement with the driver head 124 in its different adjustments. The two driver levers 126 for the two sides of the machine are fast on the same shaft 127 so that both levers are set together by the handle 130 and are released together by withdrawing the pawl or latch 132. The tacks are supplied by strips 170 which are automatically fed through the guides 172 into the path of the drivers by ratchet bars 174 that engage the stems of

the tacks close to the strip. The ratchet bars are carried on a block 175 that is movable on the guides 172, being pressed inwardly by the spring 176 that surrounds a rod 178 and being pressed outwardly by the engagement of the end of said rod by an inclined face 179 on the driver head. It will of course be understood that the tacking mechanisms on the two sides of the machine are alike except that both are connected with a single lever 126 and the single treadle 156. The driver tubes are shown as provided with holders 190 that are adapted to receive a strand of binding material and hold it in position to be fastened to the shoe by the anchor tack as the latter is driven. The binding material may be a wire having a loop formed therein which may be located by the operator and supported by the holders 190 in such relation to the driver passage that the tack will be driven through the loop in the wire. The binder may also be a strand of tape or the like which will be supported across the end of the tube, as in Fig. 16, in position to have the tack driven through it. After the tacks have been inserted the strand of binding material thus anchored at one end to the shoe may be passed by the operator around the toe of the shoe to the opposite side and as the toe clamp is retracted slightly the binder may be drawn into holding position and then the shoe completely released from the machine, after which the operator may fasten the binder to the anchor tacks on the second side of the machine, or in case tape is used, he may insert manually a tack through the tape on the second side of the shoe to fasten it.

The operation of the machine, which has been largely explained in connection with the description of the several mechanisms, may be briefly restated to present it in a connected manner. The shoe may be prepared for the operation of the machine by applying an innersole to the last bottom where it will preferably be fastened by one or more tacks, as is customary. The upper is then loosely applied to the last, the fore part of the upper presenting with relation to the sides of the last substantially the appearance shown in Fig. 5. The shoe is then rested upon the heel support 32, the latter being shifted if necessary laterally, vertically, or forwardly to adapt its position for the size and the shape of the last upon which the particular shoe is to be made, it being understood that the position of the pulling-over and lasting instrumentalities is constant in the machine. The grippers may be adjusted if necessary by the shafts 72 to adapt them to the width and the shape of the particular shoe to be operated upon and likewise the wiper plates may be adjusted in accordance with the shape of the shoe in the machine and for considerable

variations in the width of the shoe the tacking mechanisms may be shifted inwardly or outwardly by the adjusting devices 140. In presenting the shoe the outwardly flaring edges of the forward portion of the upper are thrust within the open jaws of the grippers in somewhat the manner suggested by Fig. 11. The formation of the jaws is well adapted for the reception of the upper in its normal outstanding relation to the sides of the last. The grippers are then closed by their operating treadle and locked by the pawl 55. The abutment or bottom rest 60 is then advanced by its treadle to force the last outwardly from the machine for stretching the upper. The grippers are formed, as will be understood from the several views, on a larger curvature than that of the last so that the upper is pulled obliquely away from the sides of the last, being stretched over the top face of the last to the contour of which it is thus conformed with a minimum frictional resistance to the pulling strain. The formation of the grippers to receive and hold the upper in its normal outstanding relation to the last enables the upper to be gripped and also to be pulled without crimping or folding it so that no wrinkles are formed while the upper is being pulled. It is also to be noted that the entire forward portion of the upper is pulled simultaneously, the grippers as shown having substantially continuous gripping faces extending about the forward portion of the shoe. The continuous gripping faces and the oblique pulling of the upper insure a uniform and simultaneous straining of the several portions of the upper over the last so that unequal tensions on adjacent portions of the upper tending to produce wrinkles are avoided. During or after the pulling of the upper the last may be shifted within the upper as has been described to any extent that may be required for properly positioning the upper on the last with the several lines, as the toe tip seam and the lace opening, in correct relation to the last. It will be observed that the arrangement is such that the abutment may be retracted more or less for relaxing the tension on the upper to permit the last to be easily adjusted within the upper or to be adjusted without such frictional engagement with the upper as would interfere with the relative movement which it may be desirable to effect between the upper and the last. The toe rest or clamp 100 is brought into position over the top face of the forward portion of the last by the lever 90 and then forced backwardly to clamp the upper against the top of the last, forcing it into the concave over the last ball. The upper having been pulled and adjusted into proper pulled-over position the wipers may be advanced to inclose the line of upper extend-

ing between the grippers and the last and by their continuous acting edge bend the upper inwardly over the last bottom without offering opportunity for the formation of wrinkles between the last and the wipers.

The abutment may be retracted to permit the last to be drawn rearwardly by the action of the wipers and the grippers may be caused to relax their hold on the upper so that it may slip between them. The side clamps 92 come into holding engagement with the upper at the ball of the shoe before the upper is released and hold it at this point from slipping back. The toe rest or clamp may now be actuated to force the last backwardly against the wipers to form or mold the upper against the last bottom and set it in its lasted position. On account of the conditions under which the entire forward portion of the upper is simultaneously stretched in pulling it over and is then wiped into lasted position without opportunity for the formation of any wrinkles, and the described provision for compressing or conforming the marginal portion of the upper against the innersole in its lasted position, the upper is well molded to the contour of the last and conditions are most favorable for it to retain that shape after the shoe is completed. When the upper has been forced into satisfactory lasted position the wipers will be slightly retracted to permit the tacks to be driven and the treadle 156 will be depressed for first bringing the tack holders or nozzles 120 up to the last bottom and then tripping the latch 132 for causing the drivers to be actuated for inserting the tacks. If desired, the end of the binder may be placed in the holder 190 at one side of the machine to be anchored at that time by the tacks as they are driven. The binder may then be passed around the shoe and held under tension until the shoe has been taken from the machine, after which it may be fastened to one of the tacks on the other side of the shoe.

From the foregoing description of the illustrated machine and its operation the following important observations are to be noted: that the grippers constitute upper holding means over one member of which the margin of the toe portion of the upper which is to be lasted in over the shoe bottom can be outspread in smooth, unwrinkled condition; that the other member grips, that is, engages and holds by pressure, the margin in this smooth condition and said members maintain it smooth during the upper stretching and the overwiping operations of the machine; that the wipers are separate from the upper gripping members and move to carry the upper inwardly to lasted position while the margin or edge of the upper is maintained outspread in unwrinkled condition by the gripping mem-

bers; that therefore the gripping members prevent the closing action of the wipers from "fulling" the upper and forming wrinkles in it as the upper is laid over the edge of the shoe bottom.

It has heretofore been proposed to hold the upper against the wipers by a "retarder". In the use of such a combination, in which the lower member of the holder is formed by the closing wipers, the upper is fullled by the movement of the wipers instead of being maintained in its outspread condition and the smooth lasting obtained by this invention cannot be secured. A particular advantage gained by the present invention is that the upper holding jaws, which are preferably independent of the toe wipers, prevent the upper at the sides of the toe from being carried backwardly toward the heel by the backward swinging of the wipers in their curvilinear movement, thus preventing the fullness frequently found at the extreme ends of the toe wipers, and if the upper holding jaws do not close with the wipers over the sides of the toe said jaws will produce tighter stretching of the upper under the extreme rear portions of the wipers than heretofore has been obtained.

In the provision and arrangement of upper holding members and wipers to secure the above mentioned results in lasting the toe portion of the upper without wrinkles is to be recognized important features of this invention.

Having explained the nature of this invention and described a construction embodying it in the best form now known to me, I claim as new and desire to secure by Letters Patent of the United States:—

1. A machine for working an upper over a last having in combination, means for pulling-over the shoe including means permitting relative adjustment of the upper and last, and means for lasting the shoe while the shoe remains the same side up in the machine as at the end of the pulling-over operation.

2. A machine for working an upper over a last having, in combination, mechanism for gripping the upper of the forward portion of the shoe and pulling-over the shoe, including means permitting relative adjustment of the upper and last, means for lasting the upper from a point on one side of the toe around the toe to a point on the other side of the toe, and means for inserting fastenings to secure the upper in pulled and lasted position.

3. A machine for working an upper over a last with an innersole on its bottom face having, in combination, means for pulling-over the shoe, including means permitting relative adjustment of the upper and last, means for lasting a continuous section of the

fore part of the shoe, and means for securing the lasted upper to the innersole.

4. A machine for working an upper over a last having, in combination, means for pulling-over the shoe including means permitting relative adjustment of the upper and last, and means for lasting a continuous section of the upper extending completely around the toe of the shoe, said machine being constructed and arranged to permit the operator to have a substantially unobstructed view of the top face of the shoe during the operation of the pulling and lasting means thereon.

5. A machine for working an upper over a last arranged to support the shoe in upright position with the top face of the shoe toward the operator and having, in combination, means for pulling-over the shoe, and wipers arranged to act upon the pulled upper while the upper is held under tension by the pulling-over means to force the upper into lasted position upon the last bottom.

6. A machine for working an upper over a last having, in combination, means for gripping the forward portion of the upper and pulling it on the last including means permitting relative adjustment of the upper and last, wipers, and means for actuating the wipers to work a continuous section of the upper extending around the toe into lasted position while the shoe remains in the position that it occupied at the end of the pulling-over operation.

7. A machine for working an upper over a last having, in combination, means for gripping the forward portion of the upper and pulling it over the last, wipers, and means for actuating the wipers to work the upper into lasted position, said machine having provision for relatively moving the wipers and the last perpendicularly to the plane of the last bottom to clamp the upper against the last bottom during the lasting operation.

8. A machine for use in the manufacture of boots and shoes having, in combination, means for pulling an upper over a last arranged to permit relative adjustment of the last and the pulled upper, and means for working a continuous section of the upper extending around the toe into lasted position.

9. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive at the toe end and at the opposite sides a substantial distance from the toe end of a shoe the upper in its normal outwardly flared position relatively to the forward portion of the last and pull the upper on the last, and independently actuated means for lasting the upper.

10. A machine for working an upper over

a last having, in combination, gripping means provided with substantially continuous gripping faces flared outwardly to seize the upper at the toe end and for a substantial distance along the opposite sides of the shoe in its normal outwardly flared position and pull it over the last, and independently actuated means for lasting the upper of the forward portion of the shoe.

11. A machine for working an upper over a last having, in combination, gripping means provided with substantially continuous gripping faces formed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and for a substantial distance along the sides of the forward portion of the shoe and to pull the upper on the last, and independently actuated wipers arranged to embrace the forward portion of the shoe and force the upper into lasted position.

12. A machine for working an upper over a last having, in combination, gripping means, an abutment for the last, means for actuating said abutment and gripping means relatively to pull the upper over the last, and means for forcing the pulled upper into lasted position, said machine having provisions for relaxing the pulling tension on the pulled upper at the toe and at both sides of the last simultaneously, and for relatively moving the upper and last to adjust the upper while the tension is relaxed.

13. A machine for working an upper over a last having, in combination, means for pulling an upper over the last and means for working the pulled-over upper into lasted position, said machine being arranged to permit relative adjustment of the last and the pulled upper and having provision for relaxing the tension on the pulled upper at the toe and at both sides of the last simultaneously while the adjustment is being made.

14. A machine of the class described having, in combination, means for supporting a shoe with the toe uppermost in position to present to the operator a substantially unobstructed view of the upper on the top face and the sides of the last, means for pulling over the shoe, and means for forcing the pulled over upper into lasted position while the shoe remains in substantially the same position.

15. A machine of the class described having, in combination, means for supporting a shoe in substantially upright position with the toe uppermost in position to present to the operator a substantially unobstructed view of the upper on the top face and the sides of the last, means for pulling the upper over the last, and means for driving tacks in position to fasten the upper.

16. A machine of the class described having, in combination, means for supporting

a shoe in substantially upright position with the toe uppermost in position to present to the operator a substantially unobstructed view of the upper on the top face and the sides of the last, means for pulling the upper over the last, means for actuating the last and the pulling means relatively to adjust the upper upon the last, and means for fastening the upper.

17. A machine of the class described, having, in combination, means for supporting a shoe in position to present to the operator a substantially unobstructed view of the upper on the top face and the sides of the last, means for pulling the upper over the last, means for actuating the last and the pulling means relatively to adjust the upper upon the last, and means for lasting the pulled and adjusted upper.

18. A machine of the class described having, in combination, means for supporting a shoe in position to present to the operator a substantially unobstructed view of the upper on the top face and the sides of the last, and means for pulling the upper over the last, said supporting means including a member that is arranged for movement in one direction to effect the pulling of the upper and a member that is movable in a different direction to effect adjustment of the last in the pulled upper.

19. A machine of the class described having, in combination, means for supporting a shoe with the toe in upright position, grippers for pulling the upper constructed with substantially continuous gripping faces arranged to receive the marginal edge of the upper at the end and opposite sides of the shoe, and means for forcing the upper into lasted position.

20. A machine of the class described having, in combination, means for supporting a shoe in upright position, grippers for pulling the upper constructed with substantially continuous gripping faces arranged to receive the marginal edge of the upper at the end and opposite sides of the shoe, means for relatively actuating the grippers and support to pull the upper, means for forcing the upper into lasted position, and means for inserting fastenings to secure the upper.

21. A machine for use in the manufacture of boots and shoes having, in combination, means for pulling an upper over a last arranged to permit relative adjustment of the last and the pulled upper transversely of the last, and means for working the upper into lasted position.

22. A machine for use in the manufacture of boots and shoes having, in combination, means for pulling an upper over a last, and means for working the upper into lasted position, said machine being constructed and arranged to permit relative adjustment of

the last and the pulled upper longitudinally of the last between the pulling and the lasting operations.

23. A machine for use in the manufacture of boots and shoes having, in combination, means for pulling an upper over a last and having provision for moving the last within the pulled upper to effect relative adjustment of the last and upper, and means for working the upper into lasted position.

24. A machine of the class described having, in combination, means for gripping the upper at the end and the opposite sides of the forward portion of a last, an abutment for the last bottom, means for relatively actuating the gripping means and the abutment to pull the upper, said machine being constructed and arranged to permit movement of the last upon the abutment as a fulcrum to adjust it within the pulled upper, and means for inserting tacks at the opposite sides of the shoe to secure the upper.

25. A machine of the class described having, in combination, means for gripping the upper at the end and the opposite sides of the forward portion of a last, an abutment for the last bottom, means for relatively actuating the gripping means and the abutment to pull the upper, said machine being constructed and arranged to permit movement of the last upon the abutment as a fulcrum to adjust it within the pulled upper, and means for working the upper into lasted position.

26. A machine of the class described having, in combination, means for gripping the upper at the end and the opposite sides of the forward portion of a last, an abutment for the last bottom, and means for relatively actuating the gripping means and the abutment to pull the upper, said pulling means being constructed and arranged to pull the upper at the sides and the end of the last outwardly at an oblique angle to the plane of the last bottom.

27. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment in a plane substantially perpendicular to the last bottom to stretch the upper.

28. A machine for working an upper over a last having, in combination, gripping means constructed with substantially continuous gripping faces and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom,

and means for relatively actuating the grippers and the abutment in a plane substantially perpendicular to the last bottom.

29. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper, said machine having provision for further relative movement of the last and the grippers to adjust the upper about the last.

30. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper over the last, said machine having provision for permitting relative movement of said grippers and the last to adjust the upper upon the last.

31. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper over the last, a rest for the heel of the last movable manually while the upper is under tension, and means for locking the rest.

32. A machine for working an upper over a last having, in combination, means for gripping the upper at opposite sides of the forward portion of the last, and means, including an abutment for the last, for relatively moving the grippers and last to pull the upper, said machine having provision for permitting movement of the last side-wise relatively to the gripped upper.

33. A machine for working an upper over a last having, in combination, means for gripping an upper at opposite sides of the forward portion of the last, and means, including an abutment for the last, for relatively moving the grippers and last to pull the upper, said machine having provision for permitting movement of the last about a center in the forward portion of the last to adjust the last and upper relatively.

34. A machine for working an upper over a last having, in combination, means for gripping the upper at opposite sides of the forward portion of the last, and means for relatively moving the grippers and last to

pull the upper, said machine including an abutment for the last about which the last may be turned to adjust the last and upper relatively.

35. A machine for working an upper over a last having, in combination, means for gripping the upper at opposite sides of the forward portion of the last, and means, including an abutment for the last, for relatively moving the gripping means, and last to pull the upper, said machine having provision for permitting turning movement of the last relatively to the gripped upper about an axis extending longitudinally of the shoe.

36. A machine for working an upper over a last having, in combination, means for gripping an upper at opposite sides of the forward portion of the last, and means, including an abutment for the last, for relatively moving the grippers and last to pull the upper, said machine having provision for permitting movement of the last relatively to the gripped upper about an axis extending transversely across the last bottom.

37. A machine for working an upper over a last having, in combination, means for gripping an upper at opposite sides of the forward portion of the last, means for relatively moving the grippers and last to pull the upper, a heel rest, means for actuating the heel rest to adjust the last longitudinally in the pulled upper, and means for forcing the upper into lasted position about the forward portion of the last.

38. A machine for working an upper over a last having, in combination, means for gripping the upper at opposite sides of the forward portion of the last, an abutment for the last, means for relatively actuating the abutment and gripping means to pull the upper, said last being free to be turned laterally about said abutment for adjusting the last relatively to the gripped upper.

39. A machine for working an upper over a last having, in combination, an abutment for the last, gripping means constructed and arranged for engaging the upper at opposite sides of the forward portion of a last and holding the upper laterally away from the side faces of the last, and means for relatively actuating the gripping means and abutment to pull the upper, the machine being constructed and arranged to permit the last to be swung laterally about said abutment as a center.

40. A machine for working an upper over a last having, in combination, grippers constructed and arranged to engage the upper at the end and at opposite sides of the last, an abutment for the bottom of the last about which the last may be rocked forwardly and backwardly to vary the pull on the upper at the end of the last, and means for relatively

moving the grippers and abutment substantially perpendicularly to the last bottom for pulling the upper.

41. A machine for working an upper over a last having, in combination, grippers constructed and arranged to engage the upper at the end and at opposite sides of the last, an abutment engaging the bottom of the last, and means for relatively moving the grippers and last for pulling the upper, said machine being constructed and arranged to permit movement of the shoe relatively to the abutment about an axis extending longitudinally of the last.

42. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, means for relatively actuating the grippers and the abutment to stretch the upper, and means for thereafter forcing the upper into lasted position over the last bottom.

43. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, means for relatively actuating the grippers and the abutment to pull the upper, and means presenting a substantially continuous acting edge to engage the outwardly stretched upper and force it inwardly to lasted position upon the last bottom.

44. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, means for relatively actuating the grippers and the abutment in a plane substantially perpendicular to the last bottom, and wipers for forcing the upper inwardly to and over the edge of the last.

45. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, means for relatively actuating the grippers and the abutment to stretch the upper, and means for forcing the upper inwardly to lasted position upon the last bottom, said stretching instrumentalities being constructed and arranged to maintain the upper under tension until it is clamped to the last bottom.

46. A machine for working an upper over

a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment in a plane substantially perpendicular to the last bottom to stretch the upper, said machine having provision for thereafter forcing the outwardly stretched upper inwardly to and over the edge of the last into lasted position, while maintaining it under tension.

47. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper, said machine having provision for relative movement of the last and the grippers to adjust the upper, and means for forcing the upper into lasted position.

48. A machine for working an upper over a last having, in combination, gripping means constructed and arranged to receive in outwardly extending position the marginal portion of the upper at the end and sides of the forward portion of the shoe, an abutment for the last bottom, means for relatively actuating the grippers and the abutment to stretch the upper, and means for forcing the upper into lasted position.

49. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper over the last, said machine being constructed and arranged to permit the last to be moved upon the abutment as a fulcrum to shift it within the upper while the latter is held by the grippers.

50. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper over the last, said machine being constructed and arranged to permit the last to be turned upon the abutment to vary the relative strains on different portions of the upper.

51. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment arranged to engage the bottom of the last at a substantial distance back from the end, and means for actuating the abutment to stretch the upper between the last and the grippers.

52. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper over the last, said machine having provision for further moving the last endwise relatively to the grippers.

53. A machine for working an upper over a last having, in combination, gripping means located at the sides and the toe end of the shoe constructed and arranged to receive in its normal, outwardly flared position the marginal portion of the upper placed loosely upon the last, an abutment for the last bottom, and means for relatively actuating the grippers and the abutment to stretch the upper over the last, a rest for the heel end of the last arranged for movement endwise of the last and also laterally thereof, and means for actuating the heel rest.

54. A machine for working an upper over a last having, in combination, grippers for seizing the upper, an abutment for the last bottom, means for actuating the abutment to effect the pulling of the upper, and wipers for forcing the upper into lasted position over the last bottom, said actuating means being arranged for movement under control of the workman to permit displacement of the last toward the grippers as the wipers bend the upper over the last bottom.

55. A machine of the class described, having, in combination, devices for pulling the upper at an oblique angle to the last bottom and for laying it into lasted position over the last bottom, an abutment for the last bottom, and means under control of the operator for actuating the abutment to effect a movement of the last from said devices during the pulling of the upper and for actuating the abutment toward said devices during the overlaying of the upper.

56. A machine for working an upper over a last having, in combination, means for engaging the upper, means for engaging the last, means for relatively actuating said engaging means to pull the upper about the last, said machine being constructed and arranged to permit the last to be adjusted in

the pulled upper for positioning it with relation to the lines of the upper, and wipers for forcing the marginal portion of upper over into lasted position upon the last bottom.

57. A machine for working an upper over a last having, in combination, grippers formed with substantially continuous gripping faces to engage the upper from one side of the shoe around the toe to the other side of the last, means for closing the grippers, means for relatively actuating the grippers and last to stretch the upper, means to wipe the upper over the bottom of the last, and means for inserting fastenings to secure the upper.

58. A machine for pulling-over and lasting the forward portion of a shoe having, in combination, grippers constructed and arranged to have continuous engagement with the upper from one side of the forward portion of the last around the toe to the other side of the last, means for closing the grippers, means for relatively actuating the grippers and last to stretch the upper, wipers constructed and arranged to have continuous engagement with the upper about the forward portion of the last, and means for advancing the wipers relatively to the grippers and for closing the wipers to lay the upper over the last at the end and sides of the forward portion.

59. A machine for pulling-over and lasting the forward portion of a shoe having, in combination, grippers having a configuration corresponding to the outstanding edge portion of upper material at the forward portion of a last, means for closing the grippers, means for relatively moving the last and grippers substantially perpendicularly to the last bottom to stretch the upper, and means for laying the upper over the last bottom, said machine having provision for relative movement of the grippers and the last to adjust the upper upon the last between the pulling and the overlaying operations.

60. A machine of the class described having, in combination, pulling over means comprising grippers for engaging the upper at the toe end and at opposite sides of the last and arranged to pull the upper free from the side faces of the last, wipers for forcing the upper into lasted position, and shoe supporting means, including an abutment for the forepart of the shoe, which is arranged to permit the last to be rocked to align the plane of the last bottom relatively to the plane of the wipers.

61. A machine for pulling over and lasting a shoe having, in combination curved grippers to engage the upper of the forward portion of a shoe, said grippers having a curvature of longer radius than the curvature of the forward portion of the last, means for closing the grippers, means for relatively

moving the last and grippers substantially perpendicularly to the last bottom to stretch the upper, and means for laying the upper over the last bottom.

63. A machine for pulling-over and last-
ing a shoe having, in combination, grippers
constructed and arranged to engage the upper
at the sides and end of the forward portion
of a shoe and having a configuration corre-
sponding to the outstanding edge portion
of an unlasted upper at the forward portion
of the shoe, means for relatively moving the
last and grippers to pull the upper upwardly
and outwardly, wipers, and means for actu-
ating them independently of the grippers to
force the pulled upper over the last bottom
simultaneously at the sides and end of the
forward portion.

64. A machine for pulling-over and last-
ing a shoe having, in combination, grippers
constructed and arranged to engage the up-
per of the forward portion of a shoe at the
end and at the sides of the last, means for
relatively moving the grippers and last to
pull the upper in lines oblique to the side
and end faces of the last, and means for
laying the upper over the bottom of the last;
said machine having provision for relative
movement of the grippers and the last to
adjust the upper between the pulling and
relaying operations.

65. A machine for pulling-over and last-
ing a shoe having, in combination, curved
grippers constructed and arranged to en-
gage the upper at the sides and end of the
forward portion of a last and to pull the
upper upwardly with relation to the bottom
of the last and outwardly with relation to
the side faces of the last, means for rela-
tively moving the last and the grippers,
wipers, and means to actuate the wipers
longitudinally and transversely of the last
to lay the upper over the innersole simul-
taneously at the sides and end of the for-
ward portion of the last.

66. A machine for pulling-over and last-
ing a shoe having, in combination, grippers
comprising an outer member longitudinally
curved to extend around the forward por-
tion of a last and formed to receive the edge
of the upper material of the forward por-
tion of the shoe in its normal outstanding
position. An inner gripper member of similar
shape, means for actuating the inner mem-
ber to clamp the upper against the outer
member, means for relatively actuating the
last and the grippers to pull the upper,
wipers constructed and arranged to embrace
the upper between the grippers and last,
and means for advancing and closing the
wipers to lay the upper over the last bottom.

67. A machine for pulling-over and last-
ing a shoe having, in combination, grippers
and actuating mechanism therefor, means
for moving the last away from the grippers

to stretch the upper, wipers for laying the
upper over the bottom of the last, and a
rest for the heel end of the last movable
relatively to the wipers into and out of
position to support the last against the
pressure of the wipers.

68. A machine for pulling-over and last-
ing a shoe having, in combination, grippers
and actuating mechanism therefor, means
for moving the last away from the grippers
to stretch the upper, wipers for laying the
upper over the bottom of the last, a rest
for the heel end of the last movable rela-
tively to the wipers into and out of position
to support the last against the pressure of
the wipers, and means for holding the rest
in an inoperative position.

69. A machine for pulling-over and last-
ing a shoe having, in combination, grippers,
wipers, an abutment for the last, means for
actuating the abutment to move the last
away from the grippers and into operative
relation to the wipers, means for actuating
the wipers, and a heel rest arranged to be
moved into position to support the last
against the action of the wipers.

70. A machine for pulling-over and last-
ing a shoe having, in combination, means
for pulling the upper over the last, wipers
for laying the upper over the last bottom, a
toe rest adapted to engage a top face of the
shoe and movable in the plane of its resting
face into and out of operative relation to
the shoe, and means for actuating the rest
substantially perpendicularly to said top
face of the shoe for pressing the shoe rear-
wardly toward the wipers.

71. A machine of the class described hav-
ing, in combination, manually operated
mechanisms for working an upper over a
last, and means under the control of the
operator for inserting tacks simultaneously
at opposite sides of the last.

72. A machine of the class described hav-
ing, in combination, manually operated
mechanisms for stretching an upper and
laying it over a last, tack-inserting mecha-
nisms having provision for automatically
feeding tacks, and means under control of
the operator for actuating the tacking
mechanism to insert a plurality of tacks
simultaneously at opposite sides of the last.

73. A machine of the class described hav-
ing, in combination, means for work-
ing an upper over a last, and tack-driving
mechanism which as a whole is automati-
cally movable perpendicularly to the plane
of the shoe bottom from a position out of
the way of the overworking means into a
position adjacent to the surface of the shoe
bottom and means for actuating said mecha-
nism to insert tacks.

74. A machine of the class described hav-
ing, in combination, means for engaging the
upper, means for engaging the last, means

for actuating the latter to move the last for stretching the upper, and tack-driving mechanism including a tack guide movable substantially perpendicularly to the tack-receiving surface away therefrom to permit the shoe to be presented to said upper-engaging means and toward the tack-receiving surface to locate said guides in operative relation to the shoe after the upper has been pulled.

74. A machine of the class described having means for gripping and pulling an upper at opposite sides of a last and means permitting adjustment of the last and upper relatively to position the last in relation to the lines of the upper, combined with means for lasting the forward portion of the shoe.

75. A machine of the class described having, in combination, means for gripping and pulling an upper at opposite sides of a last, means whereby the last and the upper may be relatively adjusted after the upper is pulled, and means for lasting the upper at the forward portion of the shoe all while the shoe remains in substantially the same position.

76. A machine of the class described having, in combination, means for pulling an upper on a last, means for supporting the last arranged to permit the last to be shifted in the upper for varying its position with relation to the lines of the upper, and means for forcing the upper into lasted position about the forward portion of the last.

77. A machine of the class described having, in combination, means for pulling an upper on a last, means for supporting the last arranged to permit the last to be shifted in the upper for varying its position with relation to the lines of the upper, means for forcing the upper into lasted position about the forward portion of the last, and means for inserting tacks.

78. A machine of the class described having, in combination, means for engaging an upper, means for engaging a last, means for relatively actuating said two engaging means to pull the upper, said machine being constructed and arranged to permit the last to be moved for adjusting it in the pulled upper, means for lasting the upper over the forward portion of an innersole on the last bottom, and means for inserting tacks through the upper into the innersole.

79. A machine of the class described having, in combination, grippers formed to receive at the sides and end of the shoe the flaring edge of the forward portion of the upper loosely applied to a last, means for engaging the last, means for relatively actuating said two means to pull the upper, and means for forcing the said edge portion of the upper over the last bottom.

80. A machine of the class described hav-

ing, in combination, grippers formed with outwardly inclined jaws and located to receive at the sides and end of a shoe the flaring edge of the forward portion of the upper loosely applied to a last, means for engaging the last, means for relatively actuating said two means to pull the upper, means for forcing the said edge portion of the upper over the last bottom, and means for inserting tacks to hold the upper.

81. A machine of the class described having, in combination, grippers for engaging the upper at opposite sides of the forward portion of the last and means for relatively moving the grippers and last to pull the upper perpendicularly to the last bottom, said machine being constructed and arranged to permit, for the purpose of relatively adjusting the last and upper, a movement of the last about a center located between the grippers while the upper is under strain.

82. A machine of the class described having, in combination, means for gripping an upper at opposite sides of the forward portion of the last, an abutment for the last bottom, and means for relatively moving the abutment and last substantially perpendicularly to the last bottom to pull the upper, said machine having provision for permitting, for the purpose of relative adjustment of the last and upper, turning movement of the last within the gripped upper about an axis extending longitudinally of the shoe while the upper is under strain.

83. In a machine of the class described, means for gripping an upper at opposite sides of the forward portion of a last, said gripping means comprising suitable supporting and operating mechanism and sectional gripper jaws formed to adapt them to the contour of the sides of the last.

84. In a machine of the class described, means for gripping an upper at the end and the opposite sides of the forward portion of a last, said gripping means comprising suitable supporting and operating mechanism and sectional gripper jaws formed to adapt them to the contour of the forward portion of the last.

85. In a machine of the class described, means constructed and arranged for substantially continuous gripping engagement with an upper from one side of a last around the toe end of the last to the other side, said gripping means comprising suitable supporting and operating mechanism and sectional gripper jaws having curved acting faces formed to adapt them to the contour of the sides and end portion of the last.

86. In a machine of the class described, means constructed and arranged for substantially continuous gripping engagement with an upper from one side of a last around the toe end of the last to the other side, said

gripping means comprising suitable supporting and operating mechanism and sectional gripper jaws having curved acting faces formed to adapt them to the contour of the sides and end portion of the last, said jaws being adjustably connected to the supporting and actuating mechanism.

87. In a machine of the class described, means for gripping an upper at opposite sides of the forward portion of a last, said gripping means comprising suitable supporting and operating mechanism, and sectional gripper jaws formed to adapt them to the contour of the sides of the last, said jaws being adjustably connected to the supporting and actuating mechanism.

88. In a machine of the class described, grippers constructed and arranged to engage the upper at the sides and end portion of a shoe, said grippers comprising cooperating curved jaws having a configuration corresponding to the normal, outwardly flaring position at the sides and toe end of the shoe of the edge portion of the forward part of an upper applied loosely to a last.

89. A machine of the class described having, in combination, means for working an upper over a last, tack-driving mechanism comprising a tack guide and a driver movably supported to allow it to be positioned away from the shoe during the overworking operation, and operating mechanism for moving the guide lengthwise of the driver toward the work and then actuating the driver to insert a tack.

90. A machine for working an upper over a last having means for securing the upper comprising a tack guide and a driver normally occupying a retracted position away from the shoe bottom to permit the overworking operations to take place, and means for actuating the guide and the driver perpendicularly to the tack-receiving surface to position and drive the tack.

91. A machine of the class described having, in combination, means for working an upper over a last, tack-driving mechanism comprising a tack guide and a driver movably supported to allow it to be positioned away from the shoe during the overworking operation, operating mechanism for moving the guide lengthwise of the driver toward the work and then actuating the driver to insert a tack, and means for automatically retracting the tack guide.

92. A machine of the class described having, in combination, means for working an upper over a last, tack-driving mechanism comprising a tack guide and a driver movably supported to allow it to be positioned away from the shoe during the overworking operation, operating mechanism for moving the guide lengthwise of the driver toward the work and then actuating the driver to insert a tack, means for setting the driver,

and means for retracting the tack guide automatically when the driver is set.

93. A machine of the class described having, in combination, means for working an upper over a last, fastening mechanism comprising drivers for inserting tacks simultaneously at opposite sides of the shoe, separate springs for actuating said drivers, and a single manually operated mechanism for setting the several driver springs.

94. A machine of the class described having, in combination, a single grippers mechanism constructed and arranged to receive the upper at the end and the opposite sides of the forward portion of a shoe and comprising a plurality of jaw sections presenting a substantially continuous gripping face for engaging each side of the upper, and which are supported for relative movement to adapt the grippers to shoes of different widths.

95. A machine of the class described having, in combination, grippers curved to receive the upper at the forward portion of a shoe and comprising a plurality of jaws for engaging each side of the upper, and means for adjusting the jaws to adapt the grippers to shoes of different shapes.

96. A machine of the class described having, in combination, grippers to receive the upper at the forward portion of a shoe and comprising a plurality of jaws curved from substantially the middle of the toe backwardly for engaging each side of the upper, and means for independently adjusting the jaws at the two sides of the shoe to adapt them to differences in the contours of crooked lasts.

97. A machine of the class described having, in combination, grippers constructed and arranged to receive the upper at the forward portion of a shoe and comprising a plurality of curved jaws for engaging each side of the upper, which are supported for independent movement of the jaws at the opposite sides of the shoe in directions to adapt the contour of the grippers to the shapes of different lasts.

98. A machine of the class described having, in combination, grippers constructed and arranged to receive the upper at the forward portion of a shoe and comprising a plurality of jaws for engaging each side of the upper and together forming a substantially continuous gripping member, said jaws being mounted for relative movement to adapt them to the contour of the forward portion of the shoe to be operated upon.

99. A machine of the class described having, in combination, grippers to receive the upper at the forward portion of a shoe and comprising a plurality of curved jaws for engaging each side of the upper and together form a substantially continuous gripping member, said jaws being mounted for

relative movement to adapt them to the contour of the forward portion of the shoe to be operated upon, and means conveniently accessible to the operator for adjusting the jaws.

100. A machine of the class described having, in combination, curved grippers to receive the upper at the forward portion of a shoe and comprising a plurality of jaws for engaging each side of the upper, means for adjusting the jaws to adapt the grippers to shoes of different shapes, and means for locking the jaws.

101. A machine of the class described having, in combination, grippers having curved gripping edges formed in sections, and adjusting means for varying the contour presented by the gripping edges.

102. A machine of the class described having, in combination, grippers having curved sectional jaws to grip the upper at the end and the two sides of the toe portion of the shoe, and means for adjusting the sectional jaws at the two sides of the shoe about a single center.

103. A machine of the class described having, in combination, grippers having curved sectional jaws presenting substantially continuous gripping edges to grip an extended section of upper and mounted for angular movement to adapt the gripping edges to the contour of the portion of the shoe over which the upper is to be pulled by the grippers.

104. A machine of the class described having, in combination, grippers having curved jaws, and means for adjusting said jaws to vary the curvature.

105. A machine of the class described having, in combination, grippers having curved jaws with toothed outer faces, an adjusting device engaging said toothed faces, and means for effecting adjustment of said jaws through said device.

106. A machine of the class described having, in combination, grippers having curved jaws 40, 41, shafts 72 having operative engagement with the jaws, and locking devices 74.

107. A machine of the class described having, in combination, grippers having curved jaws, supports for the jaws with which the latter have pin and curved slot connection, means for adjusting said jaws in directions determined by said curved slots, and provision for locking the jaws.

108. A machine of the class described having, in combination, lasting devices shaped in substantial similarity to the edge contour of the forward portion of a shoe and formed in relatively movable sections, and means for angularly adjusting the sections of the lasting devices relatively for contours of shoes of different width or shape, said machine

having provision for locking the lasting devices to maintain the adjustment.

109. A machine of the class described having, in combination, lasting devices shaped in substantial similarity to the edge contour of an end portion of a shoe and formed in relatively movable sections presenting a continuous operative edge, and means to move the sections independently for initially adjusting them to adapt the operative edge to variations in the shape of different shoes.

110. A machine of the class described, comprising means for gripping an upper at opposite sides of the forward portion of the last, and means for relatively moving the grippers and last to pull the upper, said machine having provision for permitting movement of the last sidewise relatively to the gripped upper.

111. A machine of the class described, comprising means for gripping an upper at opposite sides of the forward portion of the last, and means for relatively moving the grippers and last to pull the upper, said machine having provision for permitting movement of the last about a center in the forward portion of the last to adjust the last and upper relatively.

112. A machine of the class described, comprising means for gripping an upper at opposite sides of the forward portion of the last, and means for relatively moving the grippers and last to pull the upper, said machine including an abutment for the bottom of the last about which the last may be turned to adjust the last and upper relatively.

113. A machine of the class described, comprising means for gripping an upper at opposite sides of the forward portion of a last, and means for relatively moving the gripping means and last to pull the upper, said machine having provision for permitting turning movement of the last relatively to the gripped upper about an axis extending longitudinally of the shoe.

114. A machine of the class described, comprising means for gripping an upper at opposite sides of the forward portion of the last, and means for relatively moving the grippers and last to pull the upper, said machine having provision for permitting movement of the last relatively to the gripped upper about an axis extending transversely across the last bottom.

115. A machine of the class described having, in combination, end-lasting plates or wipers presenting a continuous acting edge to extend around a last end and arranged to turn about a single pivotal point, means for actuating said plates, and means for adjusting the plates with relation to their actuating mechanism.

116. A machine of the class described hav-

- ing, in combination, end-lasting plates or wipers shaped to adapt them to the contour of the end portion of a last and arranged to turn about a common axis, and means for
 5 actuating said plates, said machine having provision for effecting relative adjusting movement of the plates that act at opposite sides of the shoe to adapt them to lasts of different shapes.
- 10 117. A machine of the class described having, in combination, end-lasting plates or wipers shaped to adapt them to the contour of the end portion of a last and mounted to turn about a common pivotal point or axis,
 15 means for actuating said plates, and means for independently adjusting the plates that act at the opposite sides of the shoe.
118. A machine of the class described having, in combination, end-lasting wipers,
 20 plates for supporting the wipers, pin and curved slot connections between the wipers and plates, means for adjusting the wipers on the plates, and independent means for actuating the wipers to force the upper over
 25 the end and sides of the last.
119. A machine of the class described having, in combination, end-lasting wipers arranged to embrace an end portion of a last and to turn about a common pivotal point,
 30 plates for supporting the wipers, adjustable connections between the plates and wipers whereby the plates can be positioned for lasts of different contours, means for adjusting the wipers, and means for actuating the
 35 wipers.
120. A machine of the class described having, in combination, a last rest and lasting plates or wipers operatively connected for movement together in the same direction
 40 toward and from operative position.
121. A machine of the class described having, in combination, wipers for forcing an upper over the end portion of a last, a rest for the last, and manually controlled means
 45 for actuating the rest and the wipers together in the same direction.
122. A machine of the class described having, in combination, toe wipers, a toe rest, and connected mechanism for moving the
 50 rest in substantially the plane of its shoe resting face toward the shoe when the wipers are advanced over the shoe bottom.
123. A machine of the class described having, in combination, a toe rest adapted to
 55 occupy a position out of touch with the shoe, wipers for working the upper over the last, and connected mechanism for moving the rest into operative relation to the shoe when the wipers are advanced.
- 60 124. A machine of the class described having, in combination, a toe rest adapted to occupy a position out of touch with the shoe, means for moving the rest into operative relation to the shoe, and other manually controlled means for actuating the rest per-
 65 pendicularly to the shoe bottom.
125. A machine of the class described having, in combination, means for supporting a shoe in an upright position, wipers arranged for movement downwardly to work
 70 the upper over the last, a toe rest movable downwardly into position in front of the shoe, and means for actuating the rest to force the shoe backward against the wipers.
126. A machine of the class described having, in combination, a toe rest having a bent shank by which it is swung from and toward operative position, a pinion keyed to the shank, and a rack for engaging the pinion to swing the rest, a worm formed on the
 80 shank, a sprocket wheel mounted on the worm, and a chain on the sprocket wheel to move the shank endwise for actuating the rest from and toward the shoe.
127. A machine of the class described having, in combination, means for working an upper over a last, and means for securing the upper comprising a tack tube and a driver for inserting an anchor tack and means carried by the tack tube to hold a
 85 binder in position to cause the tack to anchor the binder to the shoe.
128. A machine of the class described having, in combination, means for working an upper over a last, and means for securing
 90 the upper comprising a tack tube and a driver for inserting an anchor tack, and means carried by the tube for holding the binder at two points and positioning an intermediate portion of the binder in the path
 100 of the tack whereby the binder is anchored at one end to the shoe.
129. A machine of the class described having, in combination, grippers comprising a stationary jaw mounted on a rigid frame
 105 and a movable jaw, and a wiper movable between an unyielding portion of said frame and said stationary jaw and supported by the latter.
130. A machine of the class described having, in combination, grippers comprising a stationary jaw mounted on a rigid frame and a wiper movable between an unyielding
 110 portion of the frame and said stationary jaw for working the upper over the last bottom, and means for pressing the last against the wiper, said stationary jaw serving to brace the wiper against the last during said pressure.
131. Means for gripping substantially the
 115 entire forward portion of the upper at its edge from one side around the toe to the other side and pulling said forward portion of the upper, and means having a substantially continuous wiping edge for forcing
 120 said forward portion of the upper over the last bottom into lasted position.
132. A machine of the class described,

having, in combination, means for gripping substantially the entire forward portion of the upper at its edge from one side around the toe to the other side and pulling said forward portion of the upper, wipers having a substantially continuous wiping edge for forcing said forward portion of the upper over the last bottom into lasted position, and means for relatively moving the last and wipers perpendicularly to the last bottom for conforming the upper between the wipers and the last.

133. A machine of the class described, having, in combination, means for gripping substantially the entire forward portion of the upper at its edge from one side around the toe to the other side and pulling said forward portion of the upper away from the side faces of the last, and means having a substantially continuous working edge for forcing the upper into lasted position and molding the upper upon the last bottom.

134. A machine of the class described having, in combination, means for working an upper over a last, and means for fastening the upper comprising tack holders movable substantially perpendicularly to the last bottom from a position out of the way of the overworking means into a position adjacent to the surface of the shoe bottom.

135. A machine of the class described having, in combination, means for working an upper over a last, mechanism for driving tacks at opposite sides of the shoe simultaneously, means for actuating said tack driving mechanism bodily perpendicularly to the shoe bottom from and toward driving position, and means for adjusting said mechanism transversely of the shoe for shoes of different widths.

136. A machine of the class described having, in combination, means for working an upper over a last, means for fastening the upper comprising tack holders movable substantially perpendicularly to the last bottom from a position out of the way of the overworking means into a position adjacent to the surface of the shoe bottom, tack drivers, and means for moving the tack holders into operative position.

137. A machine of the class described having, in combination, means for working an upper over a last, means for fastening the upper comprising tack holders movable substantially perpendicularly to the last bottom into a position adjacent to the surface of the shoe bottom, and means for actuating the drivers to insert the tacks, the insertion of the tacks following the positioning of the tack holders automatically.

138. A machine of the class described having, in combination, means structurally independent of the overworking means for working an upper over a last, means for inserting fastenings to secure the upper at

opposite sides of the shoe, and manually operated means for adjusting the inserting mechanisms from and toward the median plane of the shoe for adapting them to shoes of different widths.

139. A machine of the class described having, in combination, means for gripping an upper at opposite sides of a last and means for supporting the last relatively arranged to pull the upper and to permit adjustment of the pulled upper and the last relatively, said machine having provision for permitting the tension on the upper to be relaxed during the adjusting operation.

140. A machine of the class described having, in combination, means for pulling an upper at a plurality of points, means for wiping the pulled upper into lasted position upon the last bottom, and means for supporting the last having provision for permitting the last to be tipped laterally and longitudinally to position its bottom face in the plane of the wipers.

141. A machine of the class described having, in combination, connected wipers for forcing the upper into lasted position about the toe portion of a last, and clamps yieldingly mounted upon the wipers and arranged to engage the upper in advance of the wipers to hold it against the side of the last while the wipers force its marginal portion over the last bottom.

142. A machine of the class described having, in combination, means for pulling an upper on a last at the toe and at opposite sides of the last, toe-lasting wipers for forcing the pulled upper over the edge of the last, and clamps moving with the wipers and arranged to clamp the upper against the sides of the last in advance of the action of the wipers.

143. A machine of the class described having, in combination, means for pulling an upper on a last at the toe and at opposite sides of the last, toe-lasting wipers adapted to pull the edge of the upper from the grippers and force it into lasted position, and clamps yieldingly carried by the wipers at the opposite sides of the last to bind the upper against the side of the last before the wipers pull it from the grippers.

144. A machine of the class described having, in combination, means for pulling an upper on a last at the toe and at opposite sides of the last, toe-lasting wipers, and means for inserting tacks to fasten the upper at the sides of the shoe, including a tack at each side adapted to anchor a binder extending around the toe of the shoe.

145. A machine of the class described having, in combination, means for pulling an upper on a last at the toe and at opposite sides of the ball of the last, toe-lasting wipers, and clamps occupying an inoperative position during the pulling operation

and adapted to engage and force the upper against the last at the top face and at the opposite sides of the ball before the wipers force the upper over into lasted position.

146. A machine of the class described having, in combination, wipers for forcing an upper into lasted position over a last bottom and clamps operatively connected with the wipers and arranged for movement into holding engagement with the shoe in advance of the wipers.

147. A machine of the class described having, in combination, wipers for forcing an upper into lasted position over a last bottom, and a clamp operatively connected with the wipers and arranged for movement thereby from a position out of engagement with the last into binding engagement with the top face of the last.

148. A machine of the class described having, in combination, end-lasting wipers, an actuator therefor, a toe clamp 100, and lost motion connections from the clamp to said actuator whereby the wipers and clamp are first actuated together and then the wipers may be further actuated.

149. A machine of the class described having, in combination, means for supporting a shoe in position to present an unobstructed view to the operator, means for pulling over the shoe, said machine having provision for relative adjustments of the pulling means and the last to position the last and upper, a clamp for engaging the top face of the last over the ball to prevent the upper from bridging between the instep and the toe, means for moving the clamp from an inoperative position at one side of the shoe laterally toward operative position and means for moving the clamp into holding engagement with the shoe.

150. A machine of the class described having, in combination, a toe rest movable laterally with relation to the plane of the last bottom from and toward operative position, and means for actuating the rest perpendicularly to said plane to force it against the top face of the last.

151. A machine of the class described having, in combination, means for supporting a shoe in upright position, and grippers for pulling the upper constructed with substantially continuous gripping faces arranged to receive the marginal edge of the upper at the end and opposite sides of the shoe, said machine being arranged to present to the operator standing in working position a substantially unobstructed view of the top face of the shoe.

152. A machine for working an upper over a last having, in combination, grippers constructed and arranged to engage the upper at the end and at opposite sides of the last, and an abutment for the last bottom having a smooth acting face upon which the

last may be moved for adjusting it with relation to the gripped upper to position the upper and last relatively.

153. A machine for working an upper over a last having, in combination, grippers constructed and arranged to engage the upper at the end and at opposite sides of the last, an abutment engaging the bottom of the last, and means for relatively moving the grippers and last to put the upper under tension, said parts being constructed and arranged to permit movement of the last upon the abutment for relatively adjusting the last within the upper.

154. A machine of the class described having, in combination, means for engaging an upper at the opposite sides and the toe end of a last, means for supporting and positioning the last, and mechanism for relatively actuating said two means to pull the upper, said parts being constructed and arranged to permit the last to be adjusted within the upper for relatively positioning the upper and the last longitudinally and transversely of the shoe.

155. A machine of the class described having, in combination, grippers having curved gripping edges formed in sections and relatively adjustable to vary the contour presented by their gripping edges, and means for actuating the grippers.

156. A machine of the class described having, in combination, grippers having curved sectional jaws to grip the upper at the end and the two sides of the toe portion of the shoe, said jaws being adjustable for toe portions of different shapes, and means for actuating the grippers.

157. A machine of the class described having, in combination, grippers having curved sectional jaws to grip the upper at the end and the two sides of the toe portion of the shoe, said machine having provision for independent adjustment of the jaws at the two sides of the shoe to adapt them for right and left crooked lasts, and means for actuating the grippers.

158. A machine of the class described having, in combination, grippers provided with substantially continuous gripping edges curved to grip the upper at the two sides and the toe end of the shoe and adjustable for shoes of different shapes, and means for actuating the grippers.

159. A machine of the class described having, in combination, grippers having curved jaws relatively adjustable, and means for actuating the jaws to grip and pull an upper.

160. In a machine of the class described, means for pulling an upper comprising grippers having curved gripping faces formed in sections and relatively adjustable to adapt them to shoes of different shapes.

161. A machine of the class described hav-

ing, in combination, means for gripping an upper at the two opposite sides of the forward part of a last and pulling it over the last, said means being constructed and arranged to permit the last to be moved relatively to the grippers to adjust the upper about the last.

162. A pulling-over machine having, in combination, means for gripping an upper, means for supporting a last, and means for actuating the gripping means and the last to straighten the upper over the last under a light tension, said machine having provision for permitting relative adjusting movements of the upper and last to correct the position of the upper and provision for causing said actuating means to effect further relative movement of the upper and the last to stretch the upper after it has been adjusted.

163. A pulling-over machine having, in combination, means for gripping an upper, means for supporting a last, and actuating means adapted for operation to cause the upper to be seized and straightened over the last, and then to hold the upper under a light tension while the last and upper are relatively adjusted to correct the position of the upper, and for further operation to cause said actuating means to effect stretching of the upper snugly over the last.

164. A pulling-over machine having, in combination, means for gripping an upper, means for supporting a last, and actuating means adapted for operation to cause the upper to be seized and straightened over the last, and then to hold the upper under a light tension while the last and upper are relatively adjusted to correct the position of the upper, and for further operation to stretch the upper snugly over the last, together with means for forcing the upper into lasted position.

165. A machine of the class described having, in combination, last engaging means, means for gripping an upper at the end and opposite sides of the forward portion of a shoe and means for relatively actuating the last engaging means and the upper gripping means to put the upper under tension over the last, said machine being constructed and arranged to permit relative lateral movement of the last and the gripping means to be effected for straining of the upper at the toe end of the shoe laterally.

166. A machine of the class described having, in combination, means for gripping an upper at the end and opposite sides of the forward portion of a shoe, said means being mounted in the machine to restrain it from loose sidewise movement, and means for relatively actuating the last and the grippers to pull the upper, said machine having provision for a relative movement

of a gripper and the last transversely of the machine while the upper is under tension.

167. A machine of the class described having, in combination, means for gripping an upper at the end and opposite sides of the forward portion of a shoe to pull the upper about a last, and last resting means, one of said two means being mounted for sliding movement transversely of the machine after the upper has been pulled.

168. A machine of the class described having, in combination, means for gripping an upper at the end and opposite sides of the forward portion of a shoe to pull the upper about a last, last resting means, and a guide in which one of said means is arranged for lateral, sliding adjustment transversely of the machine.

169. A machine of the class described having, in combination, means for gripping an upper at the end and opposite sides of the forward portion of a shoe to pull the upper about a last, last resting means and position controlling means for one of said first two means by which the pulling means and the last may be laterally adjusted relatively before and after the upper has been put under tension.

170. A machine of the class described having, in combination, grippers curved to receive the upper at the end and sides of the forward portion of the shoe and formed with two lateral sections which are relatively movable to adapt the grippers to receive the uppers of shoes of different widths.

171. A machine of the class described having, in combination, grippers curved to receive the upper at the end and sides of the forward portion of the shoe and formed in two sections relatively movable about a center substantially at the middle of their edge for adaptation to the shape of the last.

172. A machine of the class described having, in combination, means for working an upper over a last, including upper pulling and overlaying devices, and tack driving devices which are mounted to permit movement transversely of the shoe bottom into place to insert tacks at the desired distance from the edge of the shoe, and are movable bodily toward the plane of the last bottom from a remote position into tack inserting relation to the overlaid upper.

173. A pulling-over machine having, in combination, upper gripping and pulling devices, actuating mechanism for causing said devices to lay the upper over the opposite sides of the last bottom in position to be fastened, and tacking mechanism cooperating therewith and including tack and driver guides which are movable perpendicular to the plane of the shoe bottom into position to clamp the upper against the shoe bottom before the tack is driven.

174. A machine for preparing a shoe for the

operation of fastening the upper to the sole on the last bottom, having, in combination, a toe rest adapted to occupy a position in which it permits an unobstructed view of the shoe, means for working the upper over the last and connected mechanism for moving the rest into operative engagement with the shoe and advancing the overworking means.

175. A machine for preparing a shoe for a subsequent operation on the shoe bottom having, in combination, a rest for the heel portion of the shoe, a rest for the toe portion of the shoe which is mounted for movement from and toward shoe engaging position, means movable lengthwise of the shoe for preparing the shoe for such further operation and connected mechanism for actuating said toe rest and said means simultaneously.

176. A machine of the class described having, in combination, gripper jaws curved to engage an upper at the end and opposite sides of the toe portion of a last, each jaw being formed in relatively movable sections, opposed jaw sections being adjustable together.

177. A machine of the class described having, in combination, gripper jaws curved to engage an upper at the end and opposite sides of the toe portion of a last, each jaw being formed in relatively movable sections, and means for adjusting pairs of opposed jaw sections together and independently of other pairs.

178. A machine of the class described having, in combination, wipers; means for actuating the wipers to advance and close over the toe of a shoe; and means independent of the wipers for engaging and holding the marginal edge of the upper at the end and for a substantial distance along the sides of the toe outwardly flared while the wipers advance.

179. A machine of the class described having, in combination, end embracing wipers and means for advancing and closing them to lay an upper over the end and sides of the toe portion of a last bottom; and gripping means relatively to which the wipers are closed and over which the upper may be spread out and gripped at the sides of the toe for holding those portions of the upper against the closing movement of the wipers.

180. In a lasting machine the combination with toe embracing wipers; of actuating means to advance the wipers over the end and close them over the sides of the toe; and means relatively to which the wipers have closing movement, said means including a member which is arranged with relation to the wipers to permit the upper at the sides of the toe to be outspread thereover

and a cooperating member for gripping said outspread side portion of the upper.

181. A lasting machine having, in combination, means for holding the marginal edge of the sides and toe portion of an upper outspread from the last, members for holding the shoe between the sole and the opposed face of the shoe, means for effecting relative movement of the last and the upper holding means to stretch the upper, toe embracing wipers separate from the upper holding means, and means for actuating said wipers to advance over the end and close over the sides of the toe while the edge of the upper is maintained outspread in unwrinkled condition by said upper holding means.

182. A machine for working an upper over a last having, in combination, a plate over which the marginal portion of an upper can be outspread at the end and sides of the toe, means to grip the upper against said plate, a last bottom abutment, means relatively actuating the abutment and the upper gripping means to pull the toe portion of the upper, end embracing wipers, means for advancing the wipers and closing them over the sides of the toe to lay the upper in lasted position upon the shoe innersole, said upper gripping means being arranged and operated to hold the upper outspread during the overlaying movement of the wipers and to allow the upper to be pulled therefrom under tension by the wipers at the sides as well as at the end of the toe, and a toe rest between which and the wipers the upper can be compressed in overlaid position.

183. A machine of the class described having, in combination, end embracing wipers, and means for advancing and closing them to lay an upper over the end and sides of the toe portion of a last bottom; and cooperating gripping members substantially co-extensive with the acting edge of the wipers and between which the margin of the upper adjacent to the tip seam is spread outwardly and held away from the edge of the last bottom during the closing movement of the wipers.

184. In a lasting machine the combination with toe embracing wipers, actuating means to advance the wipers over the end and close them over the sides of the toe, and means independent of the wipers and arranged near the end portions of the wipers which work at the sides of the toe to receive and hold outturned edge portions of the upper while the wipers close between the last bottom and said holding means.

185. A machine for working an upper over a last having in combination, end embracing wipers and means for advancing and closing them to lay the upper over the

last bottom at the end and sides of the toe; and upper holding means comprising a jaw having a curved inner edge substantially co-extensive with the edge of the wipers and constructed and arranged to receive the upper in outspread condition, and cooperating means to grip the upper and hold it frictionally on said jaw against the closing action of the wipers.

186. A machine for working an upper over a last having, in combination, end embracing wipers and means for advancing and closing them to lay the upper over the last bottom; and upper holding means comprising cooperating members which do not participate in the closing movement of the wipers and between which the upper at the end and also the sides of the toe portion of the shoe can be spread out and gripped to hold it from wrinkling during the wiper closing movement.

187. A machine of the class described having, in combination, toe embracing wipers, and means for advancing the wipers and closing them inwardly over the last bottom from opposite sides of the toe to lay the upper into lasted position; and upper gripping means relatively to which the wipers are movable and which is arranged to hold the upper outspread at the sides of the toe while the wipers advance and close over the upper.

188. A machine of the class described having, in combination, end embracing wipers, and means for advancing and closing them to lay an upper over the end and sides of the toe portion of a last bottom, a plate substantially co-extensive with the wipers and relatively to which the wipers are closed and over which the upper may be spread outwardly, and means cooperating with said plate and constructed and arranged to grip the marginal edge of the upper against said plate and hold it away from the edge of the last bottom at the end of the toe and at the sides adjacent to the tip seam during the closing of the wipers.

189. A machine of the class described having, in combination, end embracing wipers, and means for advancing and closing them to lay an upper over the end and sides of the toe portion of a last bottom; a plate substantially co-extensive with the wipers, and means for gripping the upper thereto at the toe and at points adjacent to the ends of the wipers and holding those portions of the upper during the wiper closing movement.

190. A machine for working an upper over a last having, in combination, end embracing wipers and means for advancing and closing them to lay the upper over the last bottom; upper holding means comprising a member separate from the wipers over which the upper can be spread outwardly, at the end and for a substantial distance along

the sides of the toe portion of the shoe, and a cooperating member to grip the upper and hold it against the first mentioned member in outspread condition at said points during the closing action of the wipers, and means for relatively actuating the last and said upper holding means substantially perpendicularly to the plane of the last bottom to pull the upper before it is overlaid by the wipers.

191. A machine of the class described having, in combination, wipers; means for actuating the wipers to advance and close over the toe of a shoe; and means independent of the wipers and including cooperating members substantially co-extensive with the wiper edges between which the upper can be spread outwardly away from the last edge and held in smooth unwrinkled condition from one side of the toe around to the opposite side of the toe while the wipers advance and close between the holding means and the last bottom to lay the upper over the last edge.

192. A machine of the class described having, in combination, end embracing wipers, and means for advancing and closing them to lay an upper over the end and sides of the toe portion of a last bottom, a plate having a formed edge made in two lateral sections relatively adjustable for shoes of different width and presenting an edge substantially co-extensive with the wipers, and means for holding the upper to said plate.

193. A machine of the class described having, in combination, wipers, means for actuating the wipers to advance and close over the toe of the shoe, and means for holding the marginal edge of the upper at the end of the toe outspread independently of the wipers and for holding the edge of the upper at the sides of the toe near the tip seam outspread while the wipers advance.

194. A machine of the class described having, in combination, wipers; mechanism for actuating the wipers to advance and close over the toe of a shoe; and means independent of the wipers for holding the marginal edge of the upper at the end and sides of the toe outspread while the wipers advance, said means having provision for adjustment to adapt it to hold the upper at the sides of wide and narrow shoes.

195. A machine of the class described having, in combination, wipers; mechanism for actuating the wipers to advance and close over the toe of a shoe; and means for holding the marginal edge of the upper at the end and sides of the toe outspread while the wipers advance, said means being arranged for adjustment of opposite side portions relatively to the median line of the machine for right and left crooked shoes.

196. A machine of the class described having, in combination, end lasting wipers, plates for supporting and actuating the

wipers, means to effect adjusting movements of the wipers independently of the plates, and means for actuating the plates.

197. A machine of the class described having, in combination, toe embracing wipers, and means for actuating them to lay an upper over the toe portion of a last bottom, a plate over which the upper may be spread, said plate being formed in sections which are relatively adjustable to adapt the plate to toes of different widths, and means for holding the upper on said plate.

198. A machine of the class described having, in combination, toe embracing wipers, means for actuating the wipers and means for engaging and frictionally holding the upper at the two sides of the toe adjacent to the tip seam while the wipers are actuated, said holding means being former in sections which are adjustable laterally for shoes of different widths or shapes.

199. A machine of the class described having, in combination, toe embracing wipers for engaging the outer side of the upper materials and means for actuating said wipers to lay the upper over the toe portion of a last bottom, and means to engage the inner side of the upper materials, said means comprising two lateral sections and a support therefor relatively to which an adjustment of the sections can be maintained for operating with a series of toes of similar width shape.

200. A machine of the class described having, in combination, toe embracing wipers extending on each side of the toe substantially to the tip seam, and means for actuating the wipers; and upper holding means cooperating with the end portions of the wipers to effect tensioning of the upper adjacent to the tip seam when the wipers are operated, said machine having provision for relative lateral adjustment of sections of the upper holding means at the two sides of the toe for toes of different widths:

201. A machine of the class described having, in combination, toe embracing wipers extending on each side of the toe substantially to the tip seam, means for actuating the wipers; and upper holding means cooperating with the end portions of the wipers to effect tensioning of the upper adjacent to the tip seam when the wipers are operated.

202. In a machine for working an upper over a last; wipers, mechanism for advancing the wipers to force the upper over the edge of the last into lasted position, means, located on the side of the wipers opposite the toe for engaging a substantially continuous portion of the upper extending around the flared portion of the toe of the shoe and applying tension to the upper while the wipers are advancing to lay the upper over

the last; said means being adjustable for different widths of toes.

203. A machine for working an upper over a last having, in combination, means for gripping an upper at opposite sides of the forward portion of the last, and means including an abutment for the last for relatively moving the gripping means and last to pull the upper, said machine having provision for permitting turning movement of the last within the gripped upper about an axis extending longitudinally of the shoe.

204. A machine of the class described having, in combination, grippers constructed and arranged to have substantially continuous engagement with the upper from one side around the toe to the other side, an abutment engaging the last bottom between the toe and the rear ends of the grippers, and means for relatively actuating the grippers and the abutment to put the upper under tension, said machine having provision for movement of the last about the abutment to vary the relative tension on the upper at the toe and sides of the shoe.

205. A machine of the class described comprising means presenting substantially continuous gripping surfaces for gripping an upper at the toe end and opposite sides of the fore part of the last, means for relatively moving the grippers and last to pull the upper, a heel rest movable into position for engaging the heel of the shoe, and means to actuate the heel rest to force the last longitudinally into the upper.

206. A machine of the class described, comprising means for engaging the upper, means for engaging the last, and means for relatively actuating said two engaging means to pull the upper about the last, said machine being constructed and arranged to permit the last to be adjusted in the pulled upper for positioning it with relation to the lines of the upper in a direction other than lengthwise of the last.

207. In a machine of the class described, the combination with grippers having a configuration corresponding to the outwardly flaring edge portion of upper material at the fore part of a last, of means for closing the grippers, means for relatively moving the last and grippers substantially perpendicularly to the last bottom to stretch the upper, wipers constructed and arranged to embrace the fore part of the shoe, and means to actuate the wipers for laying the upper over the last bottom.

208. In a machine of the class described, the combination with grippers having a configuration corresponding to the outwardly flaring edge portion of upper material at the fore part of a last, and provided with sectional jaws having gripping faces extending obliquely with relation to the side face of

the last, of means for closing the grippers, means for relatively moving the last and grippers substantially perpendicularly to the last bottom to stretch the upper, and means for laying the upper over the last bottom.

209. In a machine for working an upper over a last, the combination with grippers and actuating mechanism therefor, of means for moving the last away from the grippers to stretch the upper, wipers presenting a substantially continuous acting face for laying the upper over the bottom of the last at the end and opposite sides of the toe portion of the last, and a rest movable relatively to the wipers into and out of position to support the last against the pressure of the wipers.

210. In a machine for working an upper over a last, in which the last is positioned with its toe end uppermost, the combination with means for pulling the upper over the toe portion of the last, and wipers for laying the upper over the last bottom, of a toe rest adapted to engage a top face of the shoe and movable relatively to the wipers and against the shoe in a direction for pressing the shoe rearwardly toward the wipers.

211. In a machine of the class described, the combination with mechanisms for working an upper over a last, of tack-inserting mechanisms having provision for automatically feeding tacks, and manually operated means for inserting the tacks simultaneously at opposite sides of the last.

212. A machine of the class described having, in combination, means constructed and arranged for substantially continuous gripping engagement with an upper from one side of the last around the toe end of the last to the other side, said gripping means comprising suitable supporting and operating mechanism and sectional gripper jaws each having a curved acting face.

213. A pulling-over machine having, in combination, means for resting a last, toe pulling-over means arranged to engage the upper at each side of the center of the tip of the toe, said means being constructed to shape to the curvature of the toe of the last the entire marginal portion of the upper where held by said pulling-over means, said machine having provision for relative lateral movement of said toe pulling-over means and the adjacent portion of the last.

214. A pulling-over machine having, in combination, means for gripping an upper at the end and opposite sides of the forward portion of the shoe, means for relatively actuating the grippers and the last to pull the upper, and a heel rest mounted for lateral movement while in shoe resting position whereby the last may be shifted laterally with relation to the grippers.

215. A pulling-over machine having, in combination, means for gripping an upper

at the end and opposite sides of the forward portion of the shoe, an abutment for the forward portion of the last arranged to permit the last to be moved laterally with relation to the grippers, means for relatively moving the abutment and the grippers for pulling the upper, and a rest for the heel of the last mounted for lateral movement while in shoe resting position to facilitate the lateral movement of the shoe on the abutment.

216. A pulling-over machine having, in combination, grippers for engaging the upper at the end and sides of the forward portion of the last, an abutment for the last bottom for forcing the pulled upper into latched position, a heel rest mounted for movement laterally of the shoe while it is resting the shoe, and means for actuating the heel rest longitudinally of the shoe.

217. A pulling-over machine comprising means for engaging a last, grippers for engaging the upper at the end and the sides of the toe, means for relatively actuating said engaging means to pull the upper, said machine having provision for a dwell in the pulling-over operation during which may be effected angular movement of the last in the shoe to position the tip seam of the upper relatively to the median line of the last, and means to fasten the upper upon the last.

218. A pulling-over machine comprising shoe supporting means, pulling-over means, means arranged for movement, after the upper has been pulled, into and out of contact with the top face of the shoe in the region of the tip seam, and means adapted for moving the last lengthwise relatively to said last mentioned means.

219. A pulling-over machine having, in combination, means for gripping an upper at the end and opposite sides of the forward portion of a shoe, means for relatively actuating the grippers and the last to pull the upper, a heel rest mounted for lateral movement while in heel resting position, and means for actuating the heel rest longitudinally of the shoe.

220. A pulling-over machine having, in combination, means for gripping an upper at the ends and sides of the forward portion of a shoe, an abutment for the forward portion of the last arranged to permit the last to be moved laterally with relation to the grippers, a rest for the heel of the last mounted for lateral movement while in shoe resting position, and means for actuating the heel rest longitudinally of the shoe.

221. A pulling-over machine comprising means for pulling the upper over the last, and securing means adapted for securing the pulled over upper to the insole, in combination with means to support the assembled shoe with its toe pointing in a direction of non-intersection with the plane of the front of the machine and with the tip line

in full view of the operative as he stands in working position at the machine.

222. In a machine of the class described, the combination with grippers constructed and arranged to grip an upper at the sides and toe of a last, of means for closing the grippers, means for relatively actuating the grippers and last to stretch the upper, means to wipe the upper over the bottom of the last into lasted position, and means for inserting fastenings through the upper and into an inner-sole on the last.

223. A machine of the class described, comprising grippers and actuating mechanism therefor, said grippers being constructed and arranged to have continuous engagement with the upper at the sides and end of the forepart of the last and to hold the upper out of contact with the sides of the last while the upper is pulled.

224. In a machine of the class described, the combination with grippers presenting substantially continuous gripping faces and constructed and arranged to engage the upper of the forepart of a shoe at the end and sides of the last and to pull the upper in lines oblique to the side faces of the last, of means for relatively moving the grippers and the last to stretch the upper, and means for laying the upper over the bottom of the last.

225. In a machine for working an upper over a last, the combination with grippers and actuating mechanism therefor, of means for moving the last away from the grippers to stretch the upper, wipers presenting a substantially continuous acting face for laying the upper over the bottom of the last at the end and opposite sides of the toe of the last, a rest movable relatively to the wipers into and out of position to support the last against the pressure of the wipers, and means for holding the rest in an operative position.

226. In a machine of the class described, the combination with grippers formed to receive simultaneously the outwardly flaring edge of the forepart of a shoe upper at the sides and end of the toe of the last, means for engaging the last, and means for relatively actuating said two means to pull the upper, of means for forcing the said edge portion of the upper over the last bottom, and mechanism for inserting tacks into the pulled upper and innersole.

227. In a machine of the class described, grippers constructed and arranged to engage the upper at the sides and end portion of a shoe, said grippers comprising cooperating jaws having a configuration adapting them to receive in its normal, outwardly flaring position at the sides and toe end of the shoe the forward part of an upper applied loosely to a last.

228. In a pulling-over and lasting ma-

chine, the combination with positioning means engaging a last, and upper pulling means, of operating mechanism for relatively actuating said two means to pull the upper, said machine being constructed and arranged to permit relative movement of said two means for adjusting the pulled upper about the last, and means adapted to work into finally lasted position a continuous section of the pulled and adjusted upper extending around the toe of the last.

229. In a machine of the class described, the combination with grippers for engaging an upper around the toe of the last, a rest for engaging the bottom of the last, and means for actuating the rest to sink the last into the upper, of means for working the upper into lasted position about the toe end of the last, said machine being constructed and arranged to permit movement of the grippers and the last to adjust the upper upon the last.

230. In a machine of the class described, the combination with means for pulling-over the upper and means for lasting the upper, of shoe supporting means occupying an inoperative position during the operation of the pulling-over means and movable into position to support the shoe during the operation of the lasting means.

231. In a machine of the class described, the combination with means for pulling an upper about the sides of a last, and means for changing the relative positions of the last and pulling means for causing the upper to be strained backwardly along the sides of the last, of lasting plates for forcing the upper of the forepart of a shoe inwardly from the sides of the toe and backwardly from the end of the toe into lasted position over the last bottom.

232. In a pulling-over and lasting machine, the combination with mechanism for pulling-over an upper loosely arranged upon a last including means permitting relative adjustment of the upper and the last for correctly positioning them after the upper has been pulled, of lasting mechanism for working the upper into lasted position after the operation of said pulling means and while the shoe remains in substantially the same position.

233. In a machine of the class described, the combination with means for pulling an upper simultaneously at opposite sides of a last, of means for moving the last and the pulling means relatively to strain the upper lengthwise of the last, and means for forcing the upper into lasted position all arranged to operate while the shoe remains in substantially the same position.

234. A machine of the class described having means for positioning a last, comprising a rest for the bottom of the last and a heel rest laterally movable to engage heels of

differently shaped lasts, combined with means for pulling an upper on the last, and means for forcing the upper into lasted position, said lasting means being mounted to receive in substantially the same lateral position the foreparts of differently shaped lasts.

235. A machine of the class described having, in combination, pulling-over means; toe lasting means operating to force over the last bottom a continuous section of upper extending from one side around the toe to the other side, and heel resting means self-adapting to the heel ends of right and left crooked lasts the foreparts of which are positioned similarly relatively to the lasting means.

236. In a machine of the class described, the combination with wipers and means for actuating the wipers to work an upper into lasted position about the toe portion of a last, of a presser constructed and arranged to occupy during the overworking operation of the wipers a position to permit an unobstructed view of the forepart of the upper by the workman, and means for actuating the presser to engage the forepart of the shoe and force it against the wipers.

237. In a pulling-over and lasting machine, the combination with pulling-over mechanism and lasting mechanism constructed and arranged to operate upon a shoe remaining in approximately the same position in the machine, of supporting and guiding means for the lasting mechanism arranged to permit the lasting mechanism to occupy during the operation of the pulling-over mechanism a position on the same side of the plane of the last bottom as the innersole to permit an unobstructed view of the shoe upper by the workman.

238. A pulling-over and lasting machine having, in combination, means for pulling-over a shoe, means for lasting the toe portion and the sides of the forward part of the shoe, and means for inserting securing tacks at the sides of the shoe including tacks located for anchoring a binder in position to hold the toe portion of the shoe in lasted relation to the innersole.

239. A machine for pulling-over shoes and lasting the foreparts of the shoes having, in combination, pulling-over means constructed and arranged to permit relative adjustment of the upper and last, means for lasting the shoe, means for resting the shoe, and supporting connections for said three means permitting adjustment of one of said means relatively to another one laterally of the shoe for adaptation to right and left crooked lasts.

240. A machine for pulling-over and lasting shoes having, in combination, means for gripping the forward portion of the upper

and pulling it on the last, wipers, means for actuating the wipers to work into lasted position a continuous section of the upper extending around the toe, a heel rest to resist the backward thrust of the toe wipers, and supporting and guiding means for the grippers, wipers and heel rest permitting relative lateral positioning movement for right and left lasts.

241. A machine for use in the manufacture of boots and shoes having, in combination, means engaging the end and opposite sides of the toe portion of an upper for pulling over the shoe, means for working a continuous section of the pulled over upper extending around the toe into lasted position, and a heel rest, said pulling-over means and heel rest being relatively adjustable transversely of the machine for adaptation to right and left crooked lasts.

242. A machine for use in the manufacture of boots and shoes having, in combination, means for pulling an upper over a last arranged to permit relative adjustment of the last and the pulled upper transversely of the last, lasting means constructed and arranged for working the pulled over upper into lasted position about the toe portion of the last, and a heel rest between which and the overworking means there is relative movement for adaptation of the machine to right and left lasts presented to the pulling-over and the lasting means.

243. A machine for use in the manufacture of boots and shoes having, in combination, means for engaging the forepart of an upper and operating to pull the upper over a last, means for working the tensioned upper into lasted position over the forward portion of the last, said machine being constructed and arranged to permit relative adjustment of the last and the pulled upper longitudinally of the last between the pulling and the lasting operations, shoe rear part resting means, and mountings for said pulling-over means, overworking means and resting means permitting relative lateral movement of the means acting at the forepart of the shoe and the means acting at the rear part of the shoe for adaptation of said means to cooperate in working upon shoes being made on right and left crooked lasts.

244. A pulling-over and lasting machine having means for gripping and pulling an upper at opposite sides of the forepart of a last, and means for resting the forepart of the last against the action of the pulling-over means, said two means being arranged to permit adjustment of the last and upper relatively to position the last in relation to the lines of the upper, combined with means for lasting the forward portion of the shoe, and means for holding the rear part of the shoe for the lasting operation, said holding

means and said lasting means being relatively adjustable transversely of the shoe to adapt said means to cooperate in working upon shoes being made on right and left crooked lasts.

245. A pulling-over and lasting machine having, in combination, means for gripping and pulling an upper at opposite sides of a last, means whereby the last and the upper may be relatively adjusted after the upper is pulled, means for lasting the upper at the forward portion of the shoe, and a rest to resist the backward thrust of said lasting means, said rest being mounted for adjustment transversely of the machine for right and left lasts presented respectively with their foreparts in the required relation to the pulling-over and the lasting means.

246. A machine of the class described having, in combination, shoe positioning means adapted to present a shoe for lasting with its top face toward the operator and its sole face away from the operator, toe embracing wipers, and supporting and operating mechanisms for the wipers located on the same side of the plane of the top face of the shoe as is the bottom face of the shoe whereby a substantially unobstructed view of the top face of the shoe by the operator

is permitted while the wipers are working the upper into lasted position.

247. A machine of the class described having, in combination, end embracing wipers and means for supporting and actuating said wipers to force upper materials over an innersole on the bottom face of a last, said supporting and actuating means being located on the same side of the plane of the last bottom as the innersole.

248. A machine of the class described having, in combination, end embracing wipers and means for supporting and actuating said wipers to force upper materials over an innersole on the bottom face of a last, said supporting and actuating means being located on the same side of the plane of the last bottom as the innersole and the machine being arranged to present a substantially unobstructed view of the top face of the shoe by the workman during the operation of the wipers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELI BROTHERS.

Witnesses:

ARTHUR L. RUSSELL,
ELIZABETH C. COREPE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

It is hereby certified that in Letters Patent No. 1,135,945, granted April 13, 1915, upon the application of Eli Brothers, of Lynn, Massachusetts, for an improvement in "Machines for Use in the Manufacture of Boots and Shoes," errors appear in the printed specification requiring correction as follows: Page 6, line 53, for the word "portion" read *portions*; page 11, line 34, claim 19, for the article "the" read *its*; page 20, lines 62-63, claim 138, strike out the words "structurally independent of the overworking means;" same page and claim, line 64, after the word "means" insert the words *structurally independent of the overworking means*; page 22, line 38, claim 164, for the word "light" read *light*; page 25, line 19, claim 198, for the word "former" read *formed*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 5th day of October, A. D., 1915.

[SEAL.]

R. F. WHITEHEAD,
Acting Commissioner of Patents

372

373

R. F. McFEELY.
MACHINE FOR WORKING UPPERS OVER LASTS.
APPLICATION FILED MAY 28, 1910.

1,135,958.

Patented Apr. 13, 1915.

2 SHEETS-SHEET 1.

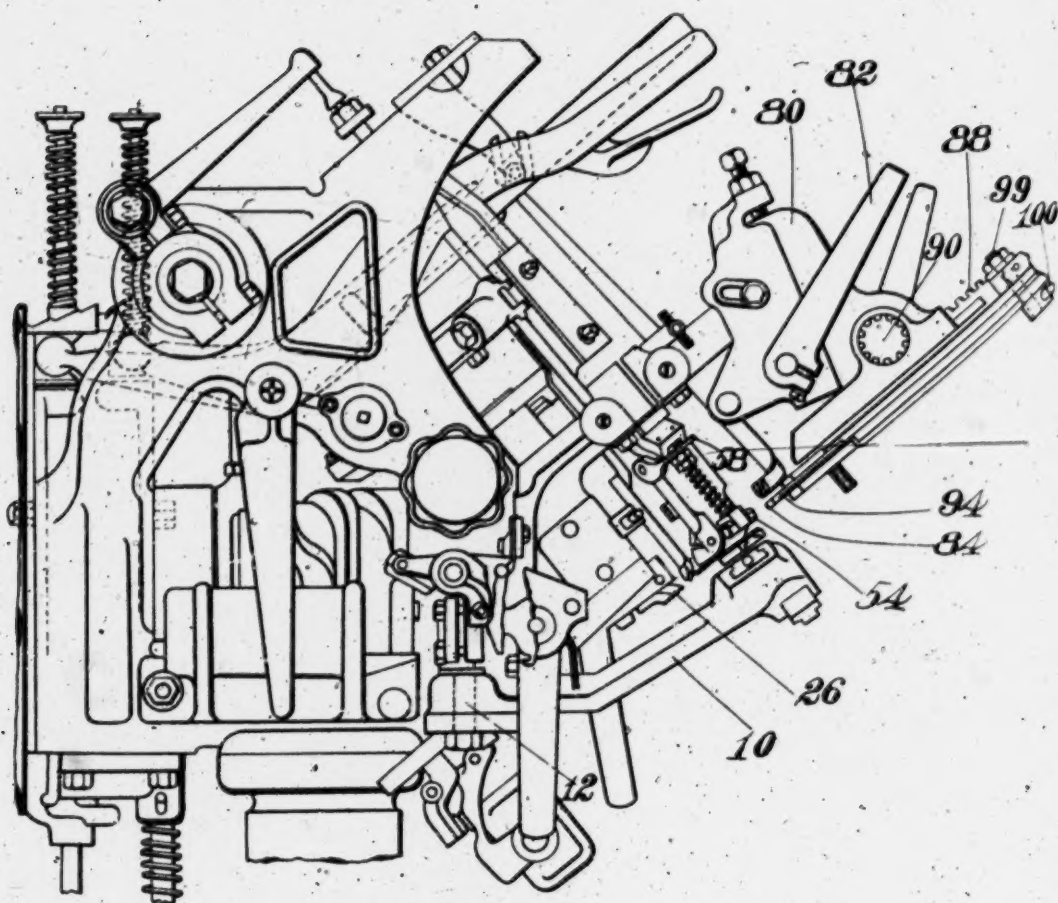


Fig. 1.

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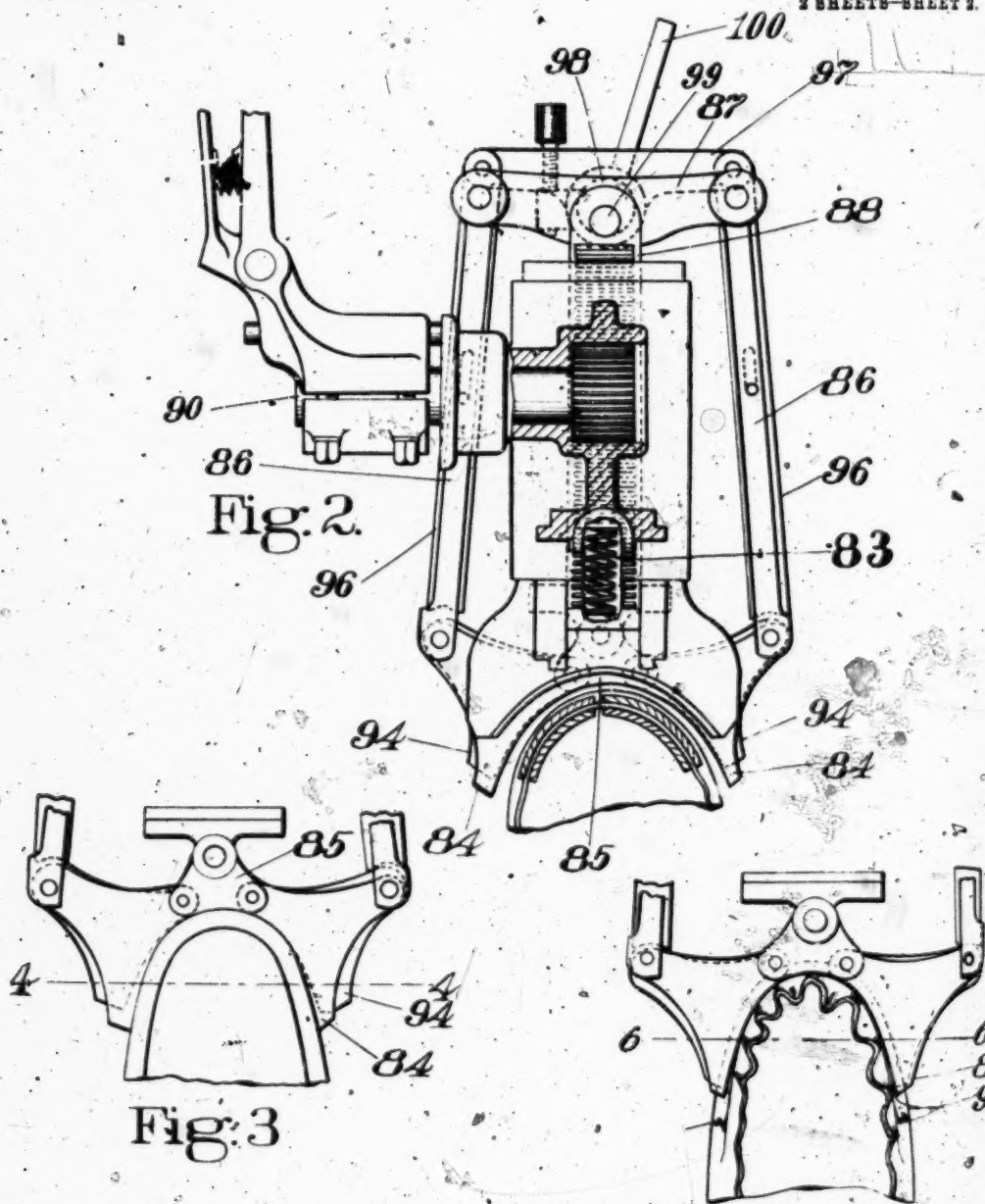
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Helen W. Board

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MACHINE FOR WORKING UPPERS OVER LASTS.
APPLICATION FILED MAY 28, 1910.

1,135,958.

Patented Apr. 13, 1915.

2 SHEETS--SHEET 2



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RONALD F. McFEELY, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR WORKING UPPERS OVER LASTS.

1,135,958.

Specification of Letters Patent.

Patented Apr. 13, 1915.

Original application filed April 19, 1909, Serial No. 490,848. Divided and this application filed May 28, 1910. Serial No. 563,907.

To all whom it may concern:

Be it known that I, RONALD F. McFEELY, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Working Uppers Over Lasts, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for use in working an upper over a last and particularly to mechanism for working an upper into lasted position over and about the toe portion of a last.

The invention is shown as embodied in a pulling-over and lasting machine of the type described in my prior application Serial No. 372,055 and the present application is a division of my application Serial No. 490,848, filed April 19, 1909, for improvements in pulling-over machines.

An object of this invention is to provide an end lasting mechanism having certain advantages in addition to those of the mechanism shown in said prior application, particularly in the direction of greater range of adaptability to varying shapes of lasts and greater efficiency in operation. It has been found that while the wipers of said application have a wide range of movement for lasts occupying different positions and having different shapes, as in the case of irregular right and left crooked lasts, yet a set of wiper plates which have an edge contour suitable for one shape of last will not force the upper inwardly into proper position against the shoulder of the innersole of a shoe which is much wider or narrower than that for which the plates are shaped.

With this and other conditions in view, an important feature of this invention consists in the provision of a plurality of wipers one of which is arranged above another. These wipers may be adaptable to different shapes of shoes, as by having different edge contours or by being mounted for different movements. In the illustrated embodiment of the invention two sets of wipers are employed one of which has an edge contour adapted for a last somewhat wider than

that for which the other is shaped. In their use one set of wipers will force the upper snugly against the lip of the innersole about one part of the toe and the other will conform to another part and a great range of shapes is thus accommodated without removing the wipers and substituting others as it has heretofore been necessary frequently to do in the use of end lasting mechanism employing end embracing wipers.

Another feature of this invention consists in the provision of operating means for giving independent working movements to the different sets of wipers. As here shown the auxiliary wipers, as they may be termed for the purpose of designation without implying any limitation, are mounted below the main wipers and, while being arranged for movement lengthwise of the shoe with the main wipers, have separate means for closing them. By this operating means the auxiliary wipers may be closed to complete the lasting of the toe in case the toe is of a shape to which the main wipers cannot conform throughout their working edge.

A further feature of this invention is found in lasting means which comprises wipers that are adapted to embrace and conform to the contour of the side faces of the toe portion of a last and are mounted for movement to wipe upwardly along the side faces of the last toward the edge thereof and comprises other wipers which are adapted to slide over the first mentioned wipers and inwardly over the last bottom to wipe the upper over the innersole while the first wipers hold it clamped against the outer sides of the last. By this arrangement the liability of the upper slipping back when the wipers begin to wipe inwardly over the last edge is avoided and a well defined angular edge may be formed instead of the rounded edge which is liable to result from the usual rubbing action of the same wiper upwardly and then inwardly over the last edge. The two sets of wipers may be the main and auxiliary wipers above described the latter of which are employed for clamping and holding the upper about the outside of the last while the main wipers first close in over the last bottom. Another purpose for which the auxiliary wipers may

advantageously be used is to press the wire, which is commonly employed for binding the upper, into its seat under the main wipers and into holding relation to the upper which is pressed by the wipers against the lip of the innersole. For this purpose the wire may be drawn under the wipers while the main wipers hold the upper in lasted position, and after the auxiliary wipers are more or less retracted, and then the wire may be forced by the auxiliary wipers into its binding position while being held down by the main wipers. It is also to be noted that the closing of the auxiliary wipers between the margin of the shoe bottom and the main wipers, while the latter are pressing down, serves further to draw in and tighten the upper over the edge of the last.

These and other features of this invention, including certain combinations of parts and more important details of construction, will be explained in connection with the following description of the mechanism in which the invention is shown as embodied and then pointed out in the claims.

Figure 1 of the drawing is a side elevation of so much of the machine as it appears necessary to show for disclosing the present invention. Fig. 2 is a plan view partly in section showing main and auxiliary wipers of different edge contours. Fig. 3 is a plan view showing the main wipers closed about the side faces of a shoe to wipe the upper upwardly toward the shoe edge as indicated in the sectional view, Fig. 4, which is taken on the line 4-4 of Fig. 3. Fig. 5 is a view similar to Fig. 3 but showing the wipers closed in against the lip of the innersole to which the auxiliary wipers conform while the main wipers are too large for this contour. Fig. 6 is a section on line 6-6, Fig. 5. The upper pulling and adjusting mechanism may be the same as that shown in said prior application although an improved toe gripper which is curved to conform to the shape of the toe end of the last is shown in these drawings but, specifically, forms no part of this invention. This mechanism does not require to be herein described but reference may be had to said prior specification for further information than that found in these drawings. It should be understood, however, that this toe lasting mechanism is adapted for general use, separately from any other mechanism.

The toe lasting devices are carried by a head 80 yieldingly upheld in its inoperative position and capable of being moved downwardly by a rack and pinion controlled by the lever 82, as fully described in said prior application. The lasting devices include the main plates 84, 85, of which the former are connected by the links 86 with an equalizing lever 87 pivoted to a rack bar 88, which is

actuated by a pinion on a lever shaft 90 while the wiper plate 85 is so connected to the rack bar 88 that it can yield backwardly and also can slide laterally with the plate 84 for adapting the contour of the acting edges of said plates to the shape of the particular last being operated upon. All these parts are fully described in said prior application and further explanation of them here is unnecessary. In addition to the wiper plates above described there are provided in accordance with this invention auxiliary wiper plates 94 located under the plates 84, as shown in Figs. 2 to 6. The auxiliary wipers are pivotally connected to the central wiper 85, being conveniently secured to the same pivot pin that fastens the wiper plates 84 to the plate 85. By this arrangement the auxiliary plates partake of the movements of the plate 85 both laterally and longitudinally of the shoe so that they are automatically positioned before the time arrives for them to be used. For actuating the auxiliary plates their outer corners are connected by links 96 with a cross bar or equalizing lever 97 within which is mounted an eccentric 98 which can be turned about a pivot pin 99 by a lever 100. The auxiliary wiper plates, which are thin as compared with the main plates, are adapted to be used after the main wiper plates have worked the upper substantially into position to be fastened and can be employed for crowding the upper, particularly at the corners of the toe or the curved portions between the toe end and sides, firmly into the angle between the feather edge and the shoulder or lip of the innersole.

The auxiliary plates may and preferably will have a different edge contour from the plates 84, as is indicated in dotted lines in the drawings, to enable them to wipe the upper up to the shoulder of the innersole at the corners and sides of a shoe of different shape than that for which the main wiper plates are formed, as for example, one that is wider or has a squarer toe. By the use of the two sets of plates a wide range of shapes and widths of shoes can be lasted without changing the wiper plates for a different set of plates. As indicated in Figs. 3 and 4, the wipers may be used for rubbing the upper on the side faces of the last toward the edge thereof for stretching the upper and conforming it to the shape of the last. When the wipers have been raised to the edge of the last the upper or main set of plates may be closed to bend or break the upper inwardly over the last edge while the lower or auxiliary set of plates continue to clamp the upper against the side of the last. In this use of the wipers, the upper which has been stretched up has no opportunity to slip back while the edge is being bent over and wiped down upon the shoe bottom. It is

is also found that by the use of these auxiliary wipers difficulties are overcome which have heretofore been experienced in smoothly lasting the corners of the toe and in firmly securing these portions of the upper in the angle of the innersole by the wire binder used for that purpose.

One of the advantages incident to the provision of main and auxiliary wipers is that in the operation of placing or seating the binding wire the upper plates 84 may be employed to hold the wire from rising while the lower plates crowd the wire into its seat which those plates may have been employed for making before the wire was introduced.

In one use for which the described mechanism is adapted, the toe gripper will retain its hold on the upper while the wipers are employed for wiping the upper upwardly along the sides of the last and the end wipers 84 are manipulated to force the upper inwardly over the corners of the toe while the middle wiper 85 and the auxiliary wipers 94 are clamping the upper against the sides of the shoe at the edge. Thereafter the wipers will be further lifted to the plane of the shoe bottom and the spring 83 will force the middle wiper 85 and the adjacent ends of the corner wipers forwardly to press the entire toe portion of the upper to the shoulder of the innersole. The lever 100 may then be manipulated to wedge the auxiliary wipers between the wipers 84 and the upper for tightening the upper, or to press the upper against the shoulder of the innersole at points not well fitted by the main wipers, or to force into holding position a wire which may have been drawn in under the plates 84, 84, 85. It is to be observed that the auxiliary wipers may be repeatedly opened and closed while the main wipers continue to hold the upper. Experience appears to indicate that this use of the auxiliary wipers will not be required for every shoe, but that they will need to be employed only in lasting particularly difficult work. It will be observed that the auxiliary wipers are arranged so that they will need to be used only when required and are not in the way during the use of the main wipers.

The manner in which the improvements herein described are to be employed has been made clear in connection with the description of the mechanism in which the invention is shown as embodied.

I claim as new and desire to secure by Letters Patent of the United States:—

1. A machine of the class described having, in combination, two wipers arranged one above the other, means for moving the wipers together, and means for moving the lower wiper independently.

2. In a machine of the class described, end lasting mechanism comprising two sets of connected wiper plates arranged one above

the other and having different edge contours for working uppers over the toe end portions of lasts varying in edge contour, and means for actuating said wiper plates independently to do their work.

3. In a machine of the class described, an end lasting mechanism comprising two pairs of wiper plates arranged for wiping an upper inwardly over the edge of a last, said plates having different edge contours and being superposed one on the other, and means for actuating said plates.

4. In a machine of the class described, end lasting mechanism comprising two pairs of wiper plates having different edge contours arranged for use together on the same end of a shoe, and actuating devices arranged to permit said pairs of plates to be operated independently.

5. In a machine of the class described, end lasting mechanism comprising two sets of connected toe embracing wiper plates arranged one above the other, and suitable operating means for said plates, said plates being arranged to permit the upper one to be used for wiping the upper over the last and for holding down a binding wire while the lower one is actuated under the upper one for forcing the wire into holding position.

6. In a machine of the class described, end lasting mechanism comprising a center wiping plate and side plates pivotally connected to the center plate, and a second pair of side plates of different edge contour from the first pair also pivoted to the center plate and arranged for independent actuation.

7. In a machine of the class described, end lasting mechanism comprising the center wiping plate 85, the side plates 84, 94 superposed one upon another and pivotally connected to the center plate, and independent means for actuating the plates 84 and 94.

8. In a machine of the class described, an end lasting mechanism comprising, in combination, two sets of wipers constructed for wiping an upper inwardly over the edge of a last and arranged to operate upon the shoe while it continues to occupy the same position, and actuating means for the wipers constructed and arranged to permit one set of wipers to be operated at the will of the operator while the other set remains at rest.

9. A machine of the class described having, in combination, two wipers arranged one above the other and having capacity for inward wiping movements over the edge of a last, and means for imparting like positioning and working movements to both wipers and also separate working movements to one of the wipers.

10. A machine of the class described having, in combination, two wipers arranged one above the other and having capacity for inward wiping movements over the edge of

a last, means for moving the wipers together, and means for imparting additional working movements to one wiper.

11. A machine of the class described having, in combination, sets of wipers which are movable to wipe the upper upwardly along the sides of the shoe toward the last edge and also are arranged for inward wiping movements over said edge, and means to actuate the upper set of wipers to wipe the upper inwardly over the edge of the last bottom while the lower set continues to clamp the upper against the side of the last.

12. A machine of the class described having, in combination, toe lasting wipers to work an upper over a last bottom and hold it, and means to engage a toe binding wire and push it ahead of the engaging means between the shoe upper and the lower face of the wiper toward upper holding position.

13. A machine of the class described having, in combination, toe lasting wipers formed and arranged to embrace the toe of a shoe to work an upper over the last bottom and hold it, auxiliary wipers mounted below the first mentioned wipers and substantially co-extensive therewith, and operating means by which the auxiliary wipers can be wedged between the lower face of the main wipers and the upper.

14. An end lasting machine including end embracing wipers comprising a central plate, end plates pivotally connected therewith, and auxiliary end plates also pivotally connected with the central plate.

15. An end lasting machine including end embracing wipers comprising a central plate, end plates pivotally connected therewith, auxiliary end plates also pivotally connected with the central plate, means for actuating said central plate and end plates together, and additional means for actuating the auxiliary plates about their pivotal connections with the central plate.

16. A machine of the class described having, in combination, toe lasting wipers arranged to work an upper into lasted position and hold it to permit a wire to be drawn under the wipers toward position to bind the upper, and means movable over each corner of the toe between the overlaid upper and the wipers to force the wire firmly into holding position at the corners of the toe.

17. In a machine of the class described, end lasting mechanism comprising a center wiping plate and side wiping plates pivotally connected to the center plate, and a second pair of side wiping plates also pivoted to the center plate and arranged below the first pair of side wiping plates.

18. In a lasting machine a central wiping plate, a pair of side plates pivotally connected thereto and a second pair of side

plates of different shape also pivoted to the center plate and arranged for independent actuation for lasting shoes having edge contours dissimilar to the edges of the plates.

19. A machine of the class described having, in combination, end lasting plates including wipers arranged for actuation to bend the upper over the last bottom at the corners of the toe, and additional wipers arranged for independent operation for wiping the entire toe portion of the upper into lasted position.

20. In a machine of the class described, end lasting mechanism comprising two superposed pairs of lasting plates, one of said pairs being arranged for bending the upper over the last bottom at the corners of the toe, and the other pair of wipers being mounted for actuation independently of the first-mentioned pair of lasting plates and arranged for wiping the entire toe portion of the upper into lasted position.

21. In a machine of the class described, an end lasting mechanism comprising two sets of wiper plates arranged for use together on the same end of a shoe and supported for relative lateral movements to adapt them for operation upon different portions of right and left crooked lasts, and means permitting independent operation of said two sets of plates.

22. In a machine of the class described, an end lasting mechanism comprising two pairs of superposed wiper plates having different edge contours and supported for relative lateral movements to adapt them for operation upon different portions of right and left crooked lasts, and means permitting independent operation of said two sets of plates.

23. In a machine of the class described, an end lasting mechanism comprising two pairs of superposed toe embracing plates, each pair of plates being mounted for combined advancing and turning movement to close and open relatively to the shoe end, the edges of said two pairs of plates being of different curvature.

24. In a machine of the class described, an end lasting mechanism comprising two pairs of superposed toe embracing plates, each pair of plates being mounted for combined advancing and turning movement to close and open relatively to the shoe end, the edges of said two pairs of plates being of different curvature, and means by which either pair of embracing plates can be closed independently of the other pair.

25. In a machine of the class described, an end lasting mechanism comprising two pairs of superposed toe embracing plates, each pair of plates being mounted for combined advancing and turning movement to close and open relatively to the shoe end, the edges of said two pairs of plates being

of different curvature, operating means by which said plates can be made to embrace the shoe, and additional means by which one pair of the plates can be further closed independently of the other pair, substantially as and for the purpose described.

26. An end lasting mechanism having, in combination, end embracing wipers having an edge contour approximately conforming to the contour of the side faces of the last around the toe portion of a shoe and mounted for movement to wipe upwardly along the side faces of the last toward the edge thereof, and other wipers which are adapted to slide over the first-mentioned wipers and inwardly over the shoe bottom to wipe the upper over the innersole while the first

wipers hold the upper clamped against the outer sides of the last or against the edge of the innersole where the latter forms a continuation of the side faces of the last, and operating means by which to effect the toe embracing and the upward wiping movements of the first-mentioned wipers and the inward wiping action of the last-mentioned wipers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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Witnesses:

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M. BROCK.

LASTING MACHINE.

APPLICATION FILED JUNE 29, 1912.

Patented June 27, 1916.

4 SHEETS—SHEET 1.

1,188,616.

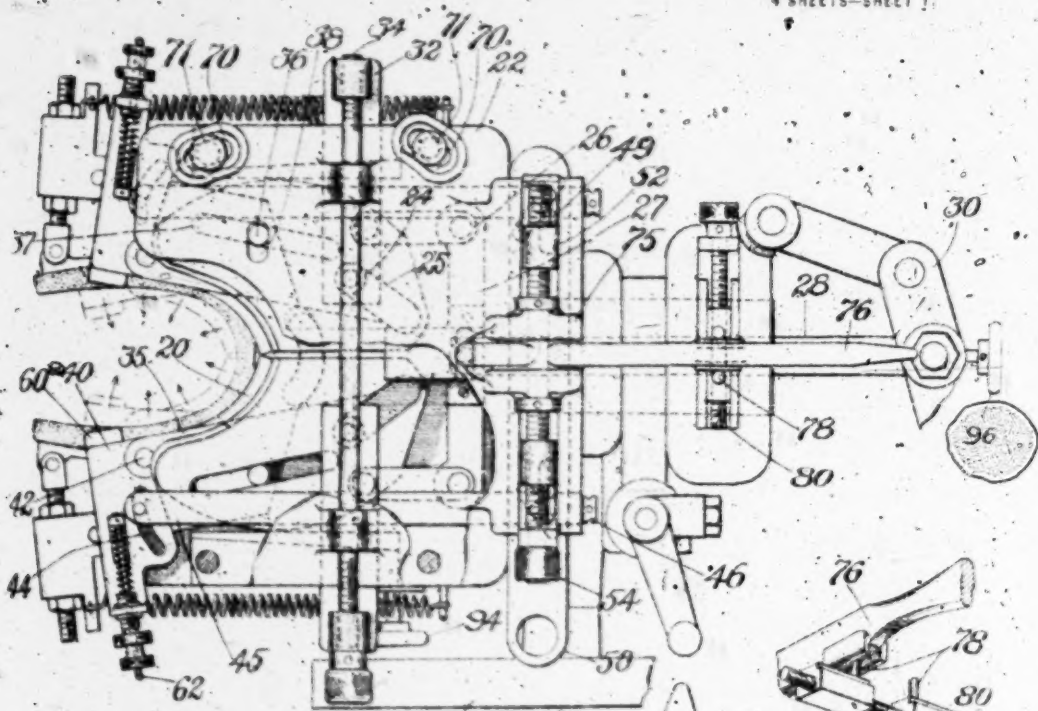


Fig. 1.

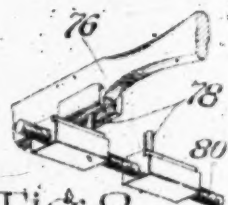


Fig. 8.

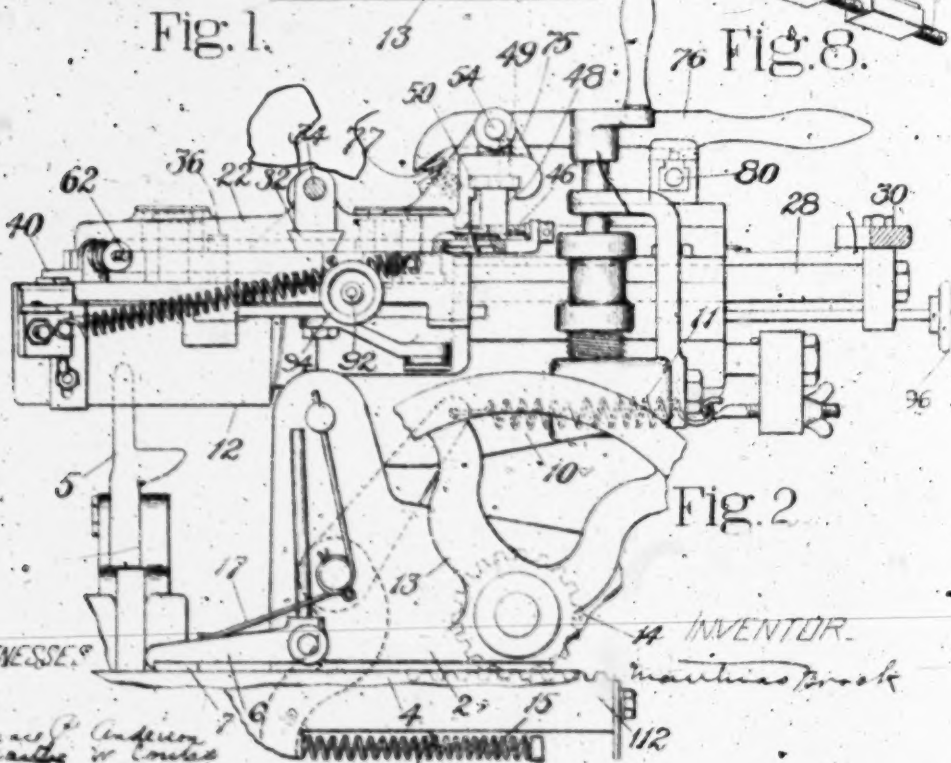


Fig. 2.

WITNESSES

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1,188,616.

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9 SHEETS-SHEET 2.

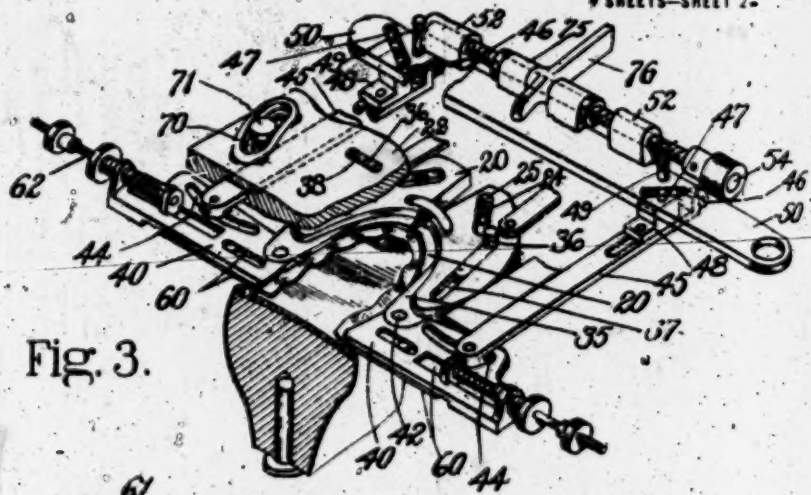


Fig. 3.

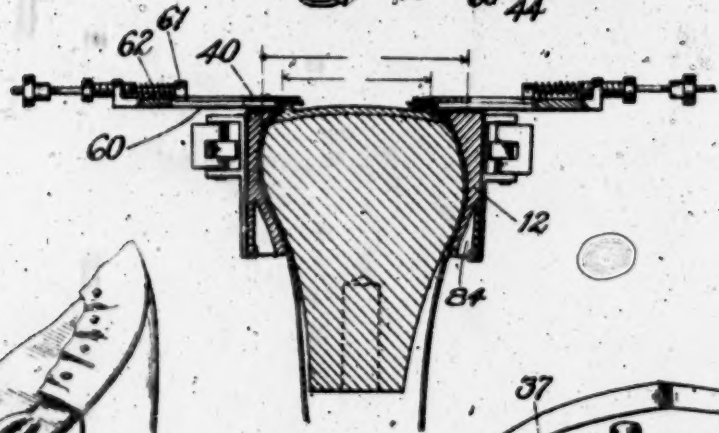


Fig. 4.

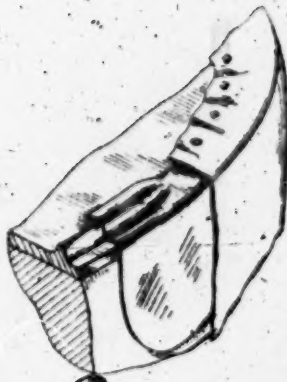


Fig. 7.

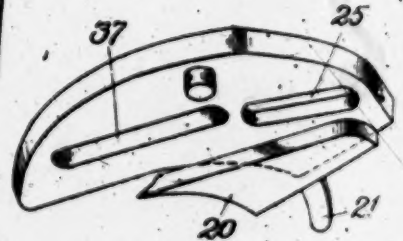


Fig. 5.

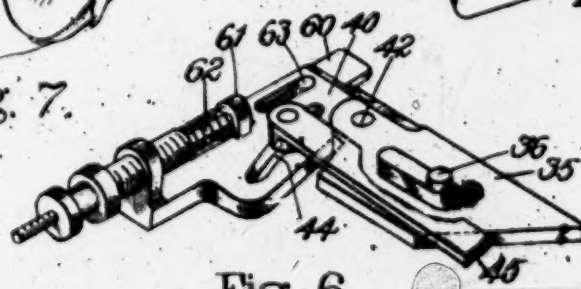


Fig. 6.

WITNESSES

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1,188,616.

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4 SHEETS—SHEET 3.

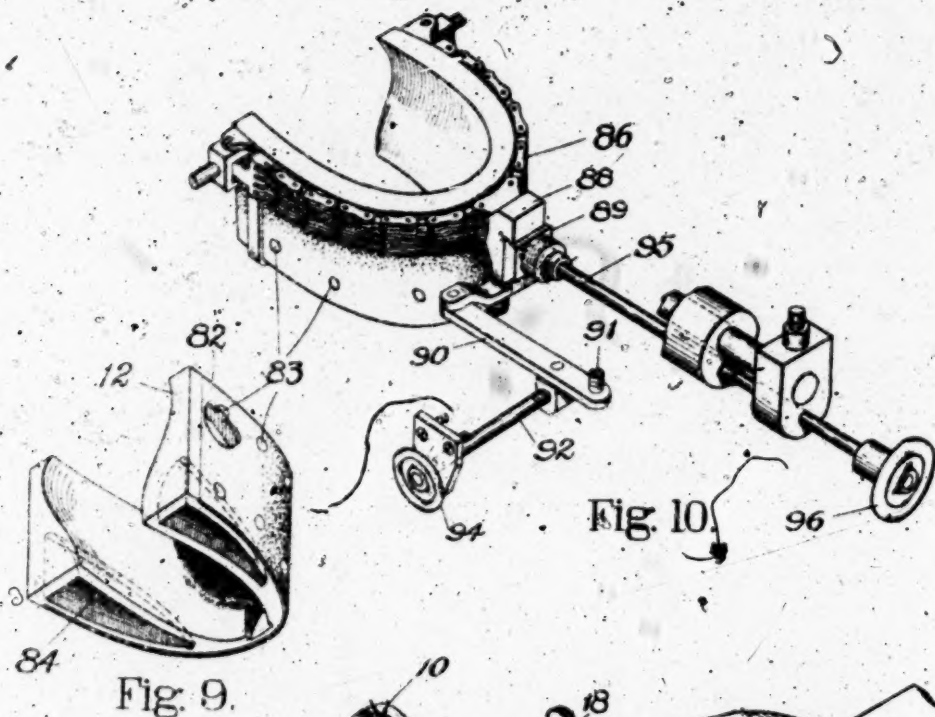


Fig. 9.

Fig. 10.

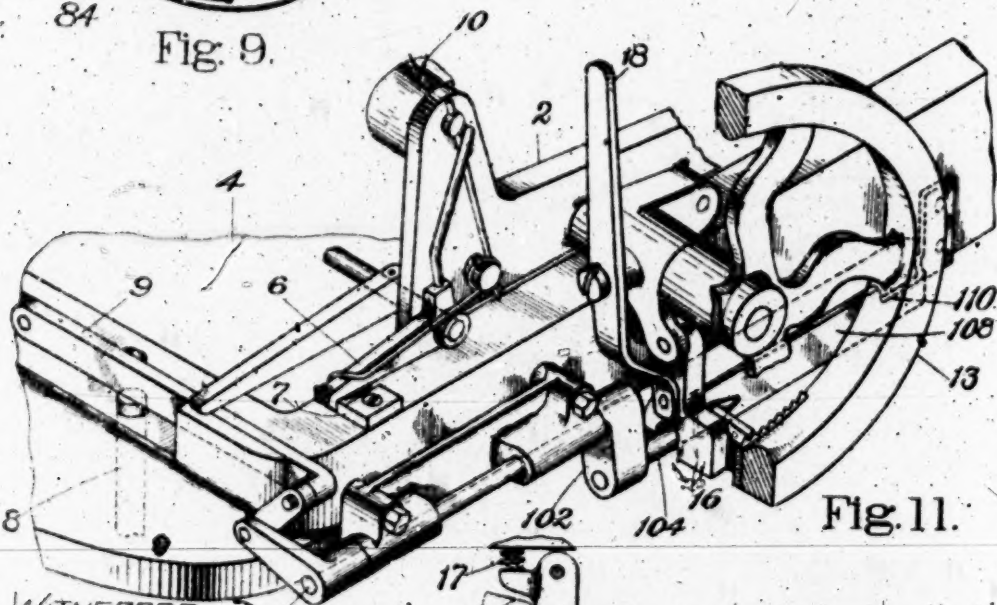


Fig. 11.

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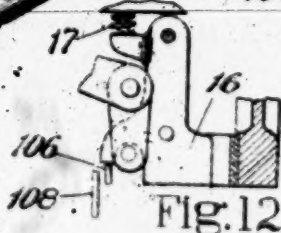


Fig. 12.

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LASTING MACHINE.
APPLICATION FILED JUNE 29, 1912.

1,188 616.

Patented June 27, 1916.

4 SHEETS-SHEET 4.

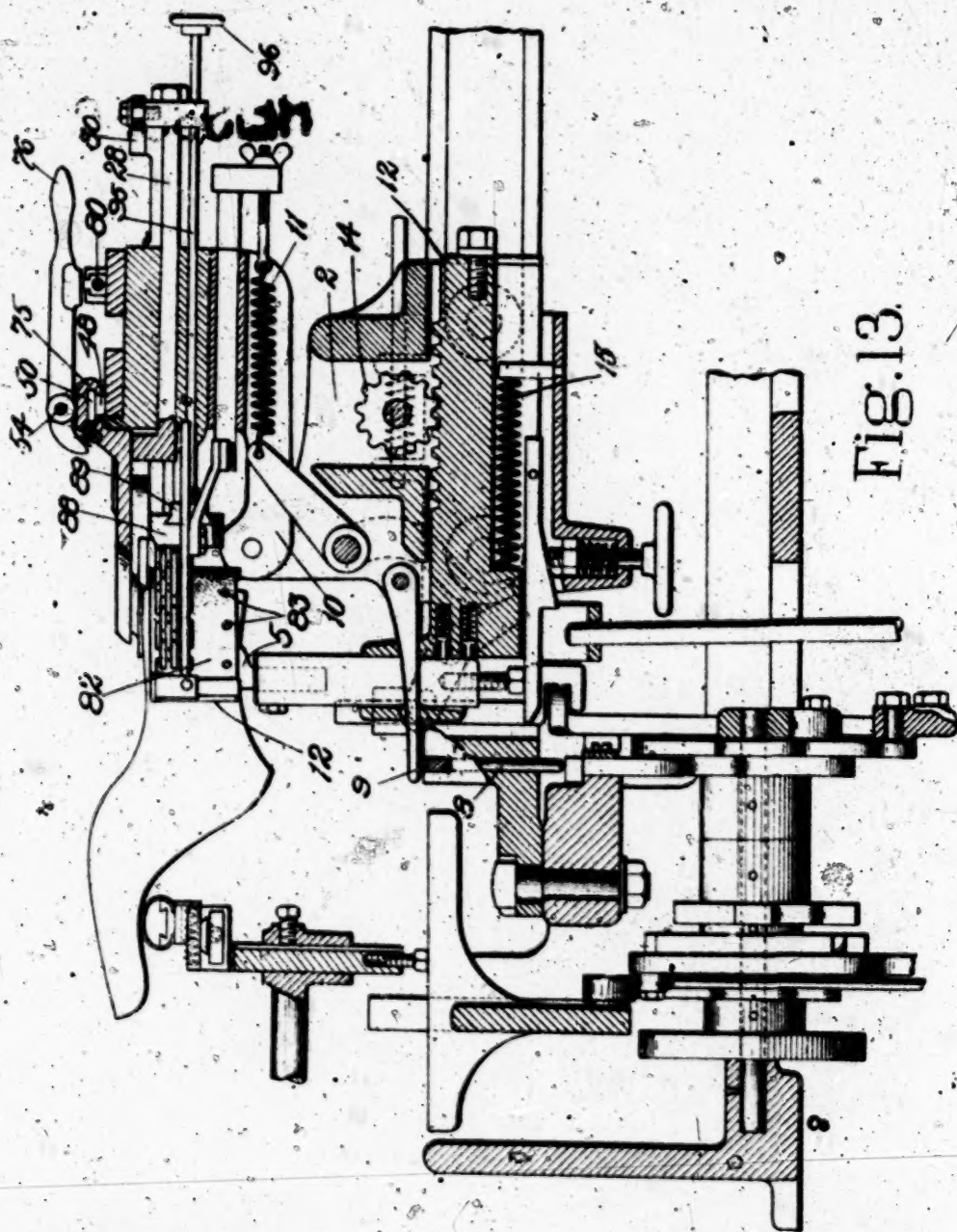


Fig. 13.

WITNESSES.

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Matthew Brock

UNITED STATES PATENT OFFICE.

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LASTING-MACHINE.

1,188,616.

Specification of Letters Patent. Patented June 27, 1916.

Application filed June 29, 1912. Serial No. 706,655.

REISSUED*To all whom it may concern:*

Be it known that I, MATTHIAS BROCK, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to lasting machines and has for one of its main objects to improve end lasting mechanisms.

An important feature of this invention consists in provision for relative angular adjustment of the heel wipers and the heel embracing band to adapt each of said instrumentalities to the contour of the portion of the last particularly acted upon by each.

In modern lasts the contour of a right or a left last in the plane of the heel seat is substantially different from the contour of the same last in a plane one half or three quarters of an inch below the heel seat. This difference is largely produced by under cutting the inner side of each last to produce a narrow shank. The wipers have to deal with the heel seat contour and the band with the lower contour. In the illustrated embodiment of this feature of the invention the adjustment is shown as produced by moving the wipers, together with their actuating mechanism, about a center located near the rear end of the heel whereby the wipers may be swung inwardly over the inner side of a right or the inner side of a left heel seat.

Another important feature of this invention consists in improved end lasting wipers and operating mechanism therefor. In the illustrated embodiment of this feature of the invention each portion of the wipers moves inwardly over the shoe bottom in a direction substantially perpendicular to the adjacent portion of the shoe edge, and only in that direction. This is to be distinguished from a wiper the closing and advancing movement of which carries it lengthwise of the shoe edge on the side of the shoe in order that it may close over the

end of the shoe. The desired object is herein shown as secured by forming each of a pair of end embracing wipers in a plurality of relatively movable sections. As shown a rear end section of a heel wiper has the usual closing and advancing movement appropriate for the curved end of the heel; a second section has a closing movement only without advancing; and a third section has a closing and a backwardly turning movement to adapt it to the incurve at the front of the heel and at the shank. Preferably this backwardly turning movement is variable for different shapes of lasts, as, for example, in its starting and finishing points.

A further feature of this invention consists in novel means for shaping the end portions of the heel stiffener flange which are to be included in the insole that connects the welt and upper to the innersole lip of a welt shoe. The stitches of the insole require to be located close down to the base of the lip and these portions of the heel stiffener material tend to bridge from the edge of the innersole to the top of the lip and offer substantial difficulty in sewing the end portions of the insole. The pressure of usual wipers or lasting plates is insufficient to shape this stiff material. I have therefore, in accordance with the illustrated embodiment of this feature of the invention provided special stiffener end shapers for this purpose which automatically shape the stiffener ends during the lasting operation. These shapers may be advantageously set into the lower face of the end sections of the wipers and normally are projected inwardly therefrom yieldingly so that they engage the stock in advance of the wipers when the wipers are closed and so that, in partaking of the turning movement of the end sections of the wipers, they rub edge-wise and crease the stock with yielding pressure against the base of the innersole lip.

Still another feature of the invention consists in means operative during the usual unjacking operation for delaying the rearward movement of the shoe until the toe rest has been lowered so that a high toed last can be withdrawn without objectionably scraping it over the toe rest.

The improvements herein described are applicable to the machine shown in my Patent No. 1,018,477 to which reference may be had for fuller drawings and description of previously known portions of the machine.

These and other features of the invention, including combinations of parts, provisions for adjustments and more important details of construction will now be described in connection with the drawings and then pointed out in the claims, except the improvements in methods of making uppers herein disclosed which is claimed in my co-pending application, Ser. No. 62,041, filed Nov. 17, 1915.

Figure 1 is a top plan view of a heel lasting mechanism embodying this invention, the cap plate being partially broken away, and arrows being applied to indicate the directions of movement of the respective sections of the new wipers. Fig. 2 is a side elevation of what is shown in Fig. 1. Fig. 3 is a perspective view to disclose details. Fig. 4 is a section showing the action of the stiffener end shapers carried by the wipers. Fig. 5 shows the lower side of the rear section of one of the wipers. Fig. 6 shows the front section of one of the wipers and the stiffeners end shaper carried on it. Fig. 7 shows the result of the action of a stiffener end shaper on a shoe. Fig. 8 is a detail of an adjuster. Fig. 9 is a perspective view of the novel heel band. Fig. 10 shows the means for adjusting the rear end of the heel band transversely of the machine and the means for adjusting the band lengthwise in the machine. Fig. 11 shows the combination for delaying the retraction of the lasted shoe in unjacking, and Fig. 12 is a detail showing the hand wheel lock controller of Fig. 11 in front elevation. Fig. 13 is a longitudinal section.

The heel lasting carriage 2 is movable forwardly over the frame 4 to clamp endwise, the shoe carried by the heel post 5 and is locked by a latch 6. The head 10 supports the heel embracing band 12 and all these parts are or may be constructed and actuated substantially as in my prior United States patent excepting as hereinafter pointed out.

The wipers, which are guided over a supporting face on the head 10 and confined by a cover plate 22, are each formed in a plurality of sections all of which have an operating connection through the rear sections 20 which are joined by a tongue 21. These sections have guide slots 25, Figs. 3 and 5, for studs 24, and through links 26 are jointed to a cross bar 27 on the front end of a plunger 28 actuated by a hand lever 30, Fig. 1.

The sections 20 are confined edgewise by edge walls on head 10 as may be seen in Fig. 1 to have a combined advancing and in-

wardly closing operative movement, and the studs 24 are mounted on separate slides 32 by which, and the right and left threaded rod 34, the sections 20, and through them the other sections of the wipers, can be adjusted to open more or less for wide and narrow shoes. Each section 20, see Fig. 5, is chamfered off on its lower side to receive the middle section 35 which partakes of the closing movement of section 20 but is restrained from advancing movement relatively to the shoe. This is accomplished by providing on the upper face of section 35 an elongated projection, Fig. 6, which fits into the slot 37 in section 20 to compel the turning movement. The projection has on its upper face a pivot stud 36 which stands in a transverse slot in cap plate 22, Fig. 1. These connections cause sections 20 and 35 respectively to close over the heel seat in directions substantially perpendicular to portions of the last edge adjacent to them.

The end sections 40 of the wipers are each pivoted at 42 to the front end portion of the section 35 and therefore have no forward movement. Instead thereof each end section has a cam slot 44 in which stands a stud on the front end of a lateral stationary bar 45 so that said section is compelled to swing rearwardly when the wipers close, as indicated by the arrows, Fig. 1. This makes its direction of closing about perpendicular to the adjacent portion of the last edge in the region of the heel breast line and causes it to tend to gather backward over the heel seat stock which usual constructions of wipers push forwardly into the shank.

The bars 45 carry adjustably by screws 46, Figs. 1, 2, and 3, on their rear portions blocks 48 having upstanding studs reaching into slots 47 in an adjusting bar 50. The slots are inclined in reverse directions so that endwise movement of bar 50 will advance one bar 45 and retract the other bar to adjust wiper end sections 40 oppositely about pivots 42 for the curve of the portion of the right or a left shoe to be acted upon by them. Adjustment of end sections 40 separately for more or less curvature can be made by the screws 46. The movement of adjusting slide 50 can be limited for the style of last being operated upon by studs 49 and stop blocks 52 which are adjustable by right and left threads on a rod 54.

Each end section 40 is cut away on its lower side to receive, flush, the stiffener end shaper 60, Figs. 3, 4, 6, which has a lug 61 projecting up through a slot in wiper section 40. This lug has a narrow neck, as has also a second stud 63, by which necks the shaper is supported to slide beneath the section 40. A spring pressed plunger 62 holds the shaper normally projected in ad-

vance of the wiper as in Fig. 1, and permits it to yield back of the wiper's edge as in Figs. 3 and 4 so that, after making early engagement with the work, the shaper will press the upper and end portion of the stiffener into lasted position in the angle between the feather edge and rib or shoulder of a left innersole. Then, while continuing the pressure, the shaper will rub edgewise as it partakes of the movement of wiper section 40 about pivot 42. This rubbing movement is for the purpose of permanently shaping the stock as in Fig. 7. The shaper may retire under the wiper section 40, and the wiper fold the stock over the innersole lip, as in Fig. 4, before the lug 61 reaches the limit of its movement relatively to section 40 and exerts a final unyielding inward pressure.

The cap plate 22 has slots 70 curved about a common axis located near the rear end of the heel band and said plate, together with the wipers, is thereby made adjustable about said center relatively to the heel band to adapt the wipers to the contour of the tread face of the last as distinguished from the contour which the heel band must fit. The wipers are free to accompany the cap plate in this adjustment, the cross bar 27 being slotted for this purpose, and are compelled to do so by the studs 36. The cap has an arm 75, being the support for adjusting slide 50, in which is pivoted on rod 54 the adjusting lever 76 and a spring 77 under the front end of the lever holds its handle end down to engage one or another of two stop pins 78, Fig. 8, or, it may be, in confinement between the two pins. By swinging the lever and engaging it over one pin the wipers will be adjusted relatively to the heel band for a right shoe and when it is engaged over the other pin they will be adjusted for a left shoe of the same pair of shoes. The pins are carried on blocks which are adjustable simultaneously in reverse directions by a screw rod 80. When the lever 75 is centered between the pins the wipers will be symmetrical with the heel band. The cap plate is confined by headed stud screws 71 which permit the sliding adjustment provided by the slots 70.

The heel band 12 is preferably made as shown in Figs. 4, 9 and 10. The body portion of the band consists of a composition of balata-gum and leather fibers or shreds which can be molded by a moderate degree of heat that is insufficient to injure the leather fibers or the leather backing 82 with which the band is shown as provided. The inner face of the band, which is unlined, takes a hard glassy surface under the heavy molding pressure. This glassy face is retained through the life of the band and enables it to be used on colored upper leathers, such as russet stock, without producing

the discoloration which results from the friction of a leather band upon colored uppers. This is perhaps due in part to the fact that the composition band conforms to the shape of the last so that its pressure is more fully distributed than is that of a leather band and also in part to the fact that the glassy surface of the balata band grips, or adheres to, the leather of the shoe upper with a non-slipping engagement greatly in excess of that of a leather band. In practice, this characteristic is utilized in several ways. For example, the band, which is highly resilient and does not lose its resiliency as does a leather band, preferably is initially formed a little narrower than the average width of the shoe heels so that as the shoe and the band are moved relatively, the one into the other, for jacking the shoe the band grips the upper at the corners; between the end and side faces, of the last and tensions it forward tightly around the rear end of the last. Also it has been discovered that in the use of this band the tack which is put into the rear end face of the shoe in the assembling operation, to hold the upper materials from displacement relatively to the heel portion of the last during the pulling-over operation and the lasting operations, can be withdrawn before the lasting operation if this heel band is used. This is because this band grips and holds the upper so securely that it prevents the stock from being drawn up between the band and the last by the inward wiping action of the lasting plates or wipers upon the heel seat. This is a great advantage because heretofore the life of a heel band has been largely determined by the extent of abrasion of the band by this heel end tack.

The leather protective covering 82 is preferably molded upon the band and has perforations through which the composition is pressed to form integral studs 83 connecting the band to the covering, said studs being headed more or less on the outside of the covering as an incident to the molding operation and forming a secure connection of the covering to the band. The band may have a vertically straight outer face which with the inner face, molded to conform to the contour of the last forms a thick wall at the lower portions of the ends of the band, as is best shown in Fig. 9. These thick walls are preferably chambered out as at 84 to reduce the weight of the band and to add to the resiliency of the end portions of the band. Preferably the band is shaped with the lower portions of its sides abnormally close together relatively to the upper portions so that when the band is closed about the last by the usual band end operating mechanism, such for example as that shown in my earlier Patent, No. 1,002,818, the lower portions of the resilient band will

engage the shoe first and the area of engagement will spread progressively toward the upper edge to wrap the stock toward the edge of the last and then hold it clamped against the side of the last throughout the height of the band. By this invention, therefore, the band closing mechanism operates through the resilient side walls of the peculiarly formed band to apply clamping pressure to the upper materials through the lower portions as well as through the upper portions of the band as contemplated by the generic claims of Patent No. 1,030,519, granted June 25, 1912 on application of

Albert A. MacLeod.

The heel band through its chain 86, Fig. 10, is attached at its rear closed end to a block 88 which is dovetailed upon a head 89 for sliding adjustment transversely of the machine. The block 88 has a lateral arm pivotally connected to the front end of a lever 90 of the third class that is fulcrumed at 91 and has threaded engagement with an adjusting rod 92 carrying a hand wheel 94. The head 89 has threaded engagement with a rod 95 having a hand wheel 96 by which the band can be adjusted lengthwise, both adjustments being independent of the wipers.

The heel carriage latch 6 is automatically lifted from the catch 7 by plunger 8 and swinging bar 9 as one of the first steps in the unjacking operation which is more fully explained in said earlier Patent No. 1,018,477, and the carriage is then retracted by a spring 11, Fig. 2. The last pin 5 is carried by a toothed slide 113, Fig. 2, through which the shoe is drawn back into the heel band by a hand wheel 13 having a pinion 14 engaging the slide, said slide compressing a spring 15. The inner face of the hand wheel rim is toothed as in Figs. 11 and 12 for engagement by a swinging latch 16 actuated by a spring 17 and having a hand operating lever 18.

Referring now to Figs. 11 and 12, the free end of bar 9 is connected by a link with an arm of a rockshaft 100 the rear arm 102 of which carries a rearwardly projecting finger 104 having a pointed end. The latch 16 has a notch in its lower edge within which the finger stands during the heel seat lasting. When the unjacking operation occurs the parts are timed to lift the latch 6 and, by the time the spring 11 begins to retract the lasting head, to turn the rockshaft 100 and withdraw the latch 16 from the hand wheel 13, whereupon spring 15 acts to hold the heel pin slide and the shoe forward while spring 11 is drawing the lasting head 10 with the wipers and heel band away from the shoe. During this time the toe rest, Fig. 13, is being lowered by the unjacking mechanism. The pin is long enough to hold the latch 16 out of contact

with the hand wheel as long as it is necessary for the last pin slide to have movement relative to the lasting head for delaying the retraction of the last and then to permit reengagement of the latch with the wheel rim whereby the shoe is caused to be drawn off the toe rest after the rest has been lowered. Alternatively the latch 16 may be held away from the hand wheel during the entire backward movement of the lasting head and to this end the latch has a depending pin 106 which is carried and held by the finger 104 to the inner side of a guide-bar 108 that is fastened to the side of the frame. When the latch slides backwardly beyond the end of the finger the pin catches against the inner side of the guide-bar which may have a notch 110 at its rear end to let the finger out again.

In using the machine the wipers are set by lever 76 for a right or left shoe, being adjusted more or less for the style of the last by the threaded rod 80, and the end sections and shank shapers are also correspondingly adjusted for the same last by the slide plate 50 and threaded rod 84. The shoe is then jacked as usual and the wipers closed by lever 30 to lay the upper over the heel seat. In so doing the rear section 20 is advanced and turned; the side section 35 is closed in substantially a right line sweep transversely of the last, guided by slot 38 which prevents any advance movement of this section; the end section 40 is carried inwardly, without advancing, by section 35 and is also turned backwardly toward the end of the heel by its cam slot 41, according to the adjustment of bar 45; the stiffener end shaper 60 is advanced into early engagement with the stock, pressing it against the base of the inner-sole lip and then yielding relatively to end section 40 while it accompanies that section in turning about pivot 42 to rub the stock edgewise of the shaper. The operator usually backs off the wipers partially to uncover the tacking line while he is inserting the tacks, but the shaper 60 is yieldingly held to its work continuously and simply gets an edgewise rubbing movement at such times. The wipers are usually advanced again over the tacks and the shoe raised by a treadle against the wipers to iron down or compress the heel seat while the operator is lasting the toe. The stiffener end shaper preferably has a thin edge to make its creasing action more effective but it is covered by the wiper as in Fig. 4 when the shoe is raised and is thereby prevented from springing. It is to be noted that the operating mechanism gives to the shaper 60 a yielding end pressure, an edgewise rub toward the heel end, a slight reverse rub when the wipers are partially backed off, a similar return, and finally an edgewise rub toward the shank

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after the compression which is incident to the raising of the jack. This effectively shapes the stock as shown in Fig. 7. When the heel has been lasted and tacked the wipers may be advanced over the tacking line and the heel raised to leave the stock under compression against the lower face of the wiper sections and the shaper 60 while the toe is being lasted, after which the shoe is unjacked by depressing the unjacked lever, as in said earlier Patent, No. 1,018,477. When this is done the hand wheel 13 is unlocked in the described time relation to the other unjacking movements to delay the retraction of the shoe until after the toe rest has descended far enough to allow the toe to pull off from it easily.

The heel band and its adjusting mechanism are not claimed in this application but are included in a divisional application, Ser. No. 913, filed July 9, 1915.

Having explained the nature of this invention and described a preferred construction embodying the same I claim as new and desire to secure by Letters Patent of the United States:—

1. In a lasting machine the combination with an end embracing band, of end embracing wipers which are operatively connected together, and means for effecting lateral angular adjustment of the band and wipers relatively about a definite substantially vertical axis.

2. In a lasting machine the combination with an end embracing band, of end embracing wipers which are operatively connected for angular adjustment laterally together in the same direction and relatively to the band, right and left stops for limiting such adjustment equally in opposite directions and means for adjusting said stops simultaneously.

3. In a lasting machine the combination with an end embracing band, of end embracing wipers which are operatively connected together, means for effecting lateral angular adjustment of the band and wipers relatively about a substantially vertical axis, and a locking latch arranged to secure the parts in definite right or left relative adjustments and also to fasten them in central relative position.

4. In a lasting machine the combination with an end embracing band, of end embracing wipers which are operatively connected together and are guided for angular adjustment in the plane of their acting faces relatively to the band, the lever 76 for effecting such adjustment, the stops 73, the adjusting and supporting rod 80 on which the stops are mounted and the spring 77 arranged to hold the lever in locking relation to one or another or both of said stops as described.

5. In a lasting machine the combination

with a heel band having a depth to extend from the tread face for a substantial distance down the side faces of the heel of an inverted last and constructed and arranged to embrace the heel portion of the last and locate the heel end of the last laterally in the machine; of heel wipers and operating mechanism to cause the wipers to embrace the heel and wipe the upper materials over the heel seat face of the last; and means for relatively positioning the heel band and the heel wipers laterally about a substantially vertical axis including devices to determine definite angular positions for right and left lasts at either side of a median position for straight lasts.

6. In a lasting machine the combination with a heel band having a depth to extend from the tread face for a substantial distance down the side faces of the heel of an inverted last and constructed and arranged to embrace the heel portion of the last and locate the heel end of the last laterally in the machine; of heel wipers and operating mechanism to cause the wipers to embrace the heel and wipe the upper materials over the heel seat face of the last; and means to effect a wiper adjustment relatively to the band to adapt the wipers to the contour of the bottom face of the last positioned laterally by the band embracing the last substantially as described.

7. In a lasting machine the combination with a heel band having a depth to extend from the tread face for a substantial distance down the side faces of the heel of an inverted last and constructed and arranged to embrace the heel portion of the last and locate the heel end of the last laterally in the machine; of heel wipers and operating mechanism to cause the wipers to embrace the heel and wipe the upper materials over the heel seat face of the last, said wipers being adjustable together in the same direction angularly relatively to the band to adapt them to differences in contour between the portions of the last which the band and the wipers embrace.

8. In an end lasting machine heel embracing wipers each comprising a heel end wiper section mounted to advance and turn inwardly and a heel side wiper section which has inward movement without any advancing movement.

9. In an end lasting machine heel embracing wipers each comprising a heel end wiper section, a heel side wiper section and connected operating means for actuating the end sections inwardly and forwardly and actuating the side sections inwardly without forward movement.

10. In a lasting machine the combination with operating mechanism, of wiping means adapted to embrace the heel portion

of a shoe and constructed and arranged relative to said operating mechanism to wipe forwardly over the rear end portion of the heel, inwardly with less forward movement over the sides of the heel and inwardly without forward movement over the front portions of the heel.

11. In a lasting machine the combination with operating mechanism, of wiping means adapted to embrace the heel portion of a shoe and constructed and arranged relative to said operating mechanism to wipe inwardly and forwardly over the rear end portion of the heel and simultaneously to wipe inwardly and backwardly over the front portions of the heel.

12. In an end lasting machine heel embracing wipers each comprising a heel end wiper section mounted to advance and turn inwardly and another wiper section which has inward and backward movement simultaneously with the movement of the end section, the acting edges of said sections being located in the same horizontal plane.

13. In an end lasting machine heel embracing wipers each comprising end sections which are advanced and turned inwardly and side sections which are connected to the end sections to receive inward movement therefrom and are restrained from advancing movement.

14. In an end lasting machine heel embracing wipers each comprising an end section having the thickened acting edge portion and the thin side portion and the side wiper section mounted on the thin portion and having an acting edge in continuation of that of the end section substantially as described, and means for actuating said two sections in different paths.

15. In an end lasting machine heel embracing wipers each comprising a heel end wiper section, having a curved acting edge and a thin lateral extension provided with slots, a side wiper section mounted under said thin extension and having a stud pivoted therein with a foot block located in one of the slots, a cover plate having a slot angular to the last-mentioned slot and into which the stud projects, and means operatively connected with the heel end section for advancing and turning it and causing the side section to be turned about the axis of the stud.

16. In an end lasting machine heel embracing wipers each comprising a heel end wiper section, a plurality of side sections and guiding and operating mechanism arranged to actuate adjacent side sections respectively, one inwardly and forwardly and the other inwardly and rearwardly.

17. In an end lasting machine, heel embracing wipers each comprising a heel end section, a heel side section, and a heel seat section, and connected means for actuating

said sections in different paths including means for directing movement of the heel side section backwardly and inwardly over the shoe bottom.

18. In an end lasting machine, heel embracing wipers each comprising a heel side section and a heel seat section having pivotal movement relatively to the front end of the side section and connected means for actuating the side section inwardly and actuating the seat section inwardly and rearwardly.

19. In an end lasting machine, heel embracing wipers each comprising a heel side section and a heel seat section pivoted thereto, means for adjusting the normal angular relation of said sections into different operative positions, and means for actuating the wipers.

20. In an end lasting machine the combination with wiper operating mechanism, of heel embracing wipers comprising means to wipe the upper over the rear end portions of the heel and forwardly extending members adjustably connected with said end wiping means at each side of the heel, and means to maintain said members in different operative relations to said end wiping means.

21. In an end lasting machine the combination with wiper operating mechanism, of heel embracing wipers comprising means to wipe the upper over the rear end portions of the heel, and forwardly extending members pivotally connected with said end wiping means at each side of the shoe and adjustable about their pivotal connections to adapt them for the greater incurve at the inner side of the heel than at the outer side of the heel of right and left crooked lasts.

22. In an end lasting machine the combination with wiper operating mechanism, of heel embracing wipers comprising wiping means extending forwardly along the sides of the heel, and end sections jointed thereto and adjustable thereon independently of the action of the operating mechanism.

23. In an end lasting machine, heel embracing wipers each comprising a heel side section and a heel seat section pivoted thereto, means for adjusting the normal angular relation of said sections, and actuating means for relatively moving the wipers to effect the lasting operation.

24. In an end lasting machine, heel embracing wipers each comprising a heel side section and a front end section connected therewith to permit angular turning movement in the plane of said sections, means for holding said sections in different angular relations, and operating means for relatively moving said wipers to effect the lasting operation.

25. In an end lasting machine, heel embracing wipers each comprising a heel side

section and a heel seat section connected herewith to permit angular turning movement in the plane of said wiper sections, means for adjusting the normal angular relation of said sections and actuating mechanism therefor having provision for moderating the movement of the seat section while the side section is being moved.

26. In an end lasting machine, end embracing wipers each comprising a rear section and a side section, operating means for imparting to the rear section an advancing and a laterally inward movement to close over the curved end of the shoe and for imparting to the side section an inward movement without advancing.

27. In an end lasting machine, end embracing wipers each comprising a rear section and a side section, operating means for imparting to the rear section an advancing and a laterally inward movement to close over the curved end of the shoe, connections from the rear section to actuate the side section and means to modify the direction of movement of the side section and cause it to differ from that of the rear section.

28. In an end lasting machine, end embracing wipers comprising means to lay the upper over the rear and side portions of a heel and end sections; mechanism for imparting operative movements to the overlaying means, connections from said means to operate the end sections, and means to modify the direction of movement of the end sections and cause their movement to differ from that of the first mentioned overlaying means.

29. In an end lasting machine, end embracing wipers each comprising a rear section and a side section, operating means for imparting to the rear section an advancing and a laterally inward movement to close over the curved ends of the shoe, connections from the rear section compelling the side section to partake of the inward movement of the rear section and other means controlling advancing movement of the side section.

30. In an end lasting machine, end embracing wipers each comprising a rear section and a side section, operating means for imparting to the rear section an advancing and a laterally inward movement to close over the curved end of the shoe, a sliding connection between the sections arranged to carry the side section inwardly with the rear section, a cover, and a slot and pin connection between the cover and side section for controlling advancing movement of the side section.

31. In a heel lasting machine end embracing wipers, each comprising a rear section, a side section and an end section, means for advancing the rear section and turning it inwardly to close over the curved end of the

heel seat, connections therefrom to move inwardly the side and end sections and means to restrain the side and end sections from partaking of the advance of the rear section.

32. In a heel lasting machine, end embracing wipers, each comprising a rear section, a side section and an end section, and operating means for advancing and simultaneously turning inwardly the rear sections to close over the curved rear end of the last, and for closing inwardly without advancing to a like extent the side and end sections of the wipers.

33. In a heel lasting machine, end embracing wipers, each comprising a rear section, a side section and an end section, and operating means for advancing and simultaneously turning inwardly the rear sections to close over the curved rear end of the last, said operating means acting through the rear section to close inwardly the side and end sections, and other means for controlling advancing movement of the side and end sections.

34. In a lasting machine, end embracing wipers each comprising a rear section, a side section with relation to which the rear section can slide longitudinally of the shoe, and operating means for turning inwardly and forwardly sliding the rear section and turning inwardly the side section.

35. In a lasting machine, end embracing wipers each comprising a rear section, a side section with relation to which the rear section can slide longitudinally of the shoe, and operating means for turning inwardly and forwardly sliding the rear section and moving inwardly the side section; combined with means for controlling the direction of the inward movement of the side section independently of the rear section.

36. In a lasting machine, end embracing wipers each comprising a rear section, a side section with relation to which the rear section can slide longitudinally of the shoe, and an end section carried by the side section and having an independent movement thereon, and means for imparting appropriately different movements to the several sections, for the purpose described.

37. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear section takes place and which partakes of the inward movement of the rear section.

38. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear

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section takes place and which partakes of the inward movement of the rear section, and means for imparting additional inward movement to the front end section.

39. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear section takes place and which partakes of the inward movement of the rear section, and means for imparting to the front end section an additional inward movement having a backward component toward the rear end of the heel.

40. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear section takes place and which partakes of the inward movement of the rear section, and means which is adjustable to impart to the front end section a variable movement inwardly while the rear section is being advanced and moved inwardly.

41. In an end lasting machine, heel embracing wipers each comprising a rear section, a front end section and connected means for actuating the rear section forwardly and inwardly over the curved rear end of the heel and for actuating the front end section inwardly and backwardly in a curve substantially perpendicular to the incurve on the side of a shoe near the heel breast and rear portion of the shank.

42. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear section takes place and which partakes of the inward movement of the rear section; and means for adjusting the front end sections of the wipers relatively to the rear sections.

43. In an end lasting machine, heel embracing wipers each comprising a rear section, means for moving it forwardly and inwardly over the curved rear end of the heel, and a front end section which partakes of the inward movement of the rear section, and means permitting and maintaining adjustment of the front end sections of the wipers relatively to the rear sections.

44. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear

section takes place and which partakes of the inward movement of the rear section; and means for adjusting the front end sections of the wipers together toward the left or toward the right for right and left crooked lasts.

45. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section relatively to which the forward movement of the rear section takes place and which partakes of the inward movement of the rear section; means for adjusting the front end sections of the wipers together toward the left or toward the right for right and left crooked lasts and also means for adjusting said front end sections relatively for differences in degrees of crookedness in lasts.

46. In an end lasting machine, heel embracing wipers each comprising a rear section, means for actuating it forwardly and inwardly over the curved rear end of the heel, and a front end section which partakes of the inward movement of the rear section; and means for adjusting said front end sections relatively to each other and to the rear sections for differences in degrees of crookedness in lasts.

47. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers carried by the wipers and receiving automatically during the operation of the wipers a stiffener end shaping movement additional to the movement of the wipers.

48. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers carried by the wipers, means for advancing and closing the wipers to wipe the upper over the end and sides of the heel into lasted position upon the heel seat of the shoe, and operating connections through which the stiffener end shapers are caused to partake of the closing movement of the wipers but not of the advancing movement.

49. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers carried by the wipers, means for advancing and closing the wipers to wipe the upper over the end and sides of the heel into lasted position upon the heel seat of the shoe, and operating connections through which the stiffener end shapers are caused to partake of the closing movement of the wipers and are simultaneously moved reversely to the direction of advancing movement of the wipers.

50. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers carried by the wipers, means for operating the wipers to do their work, and means to cause the shapers to close against the work and to rub the shoe backwardly for

creasing the stock into the angle between the feather and the lip or rib of a welt inner-sole while the wipers are operating.

51. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers carried by the wipers, and normally projecting yieldingly in advance thereof to engage the work ahead of the wipers and receive a movement lengthwise of the shoe as they yield backwardly while the wipers advance and close, and means for advancing and closing the wipers.

52. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers set into the lower face of the wipers and normally projecting inwardly therefrom yieldingly so that they engage the stock first when the wipers are closed.

53. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers set into the lower face of the wipers and normally projecting inwardly therefrom yieldingly so that in partaking of the turning movement of the wipers they rub edgewise and crease the stock with yielding pressure against the base of the inner-sole lip, and means for advancing and turning the wipers.

54. In a heel seat lasting machine, heel seat lasting wipers, and heel stiffener end shapers set into the lower face of the wipers and normally projecting inwardly therefrom yieldingly and adapted to yield back of the wiper's edge to press the stock against the base of the lip of the innersole while the overlying portion of the wiper folds the edge of the stock over the lip.

55. In a heel seat lasting machine, wipers, operating means therefor, stiffener end shapers movable about pivots near the front ends of the wipers, and cooperating cam slots and rolls operatively connected with said operating means to impart to the shapers a movement about their pivots.

56. In a heel seat lasting machine, wipers, operating means therefor, stiffener end shapers movable about pivots near the front ends of the wipers, cooperating cam slots and rolls operatively connected with said means to impart to the shapers a movement about their pivots additional to the movement of the portions of the wipers upon which they are pivoted, and adjustable means for varying the said additional movement.

57. In a lasting machine, the combination with a vertically movable toe rest, a last pin, a heel lasting head in which the last pin is supported for rearward movement against yielding resistance, means for locking the last pin in adjusted position in the lasting head, and means for locking the head in its forward position against yielding resistance, of unjacking means for releasing the toe

rest, the lasting head and the last pin, arranged to allow initial backward movement of the lasting head relatively to the last pin while the toe rest is descending to relieve the toe supporting pressure before the shoe is drawn off the rest by the last pin.

58. In a lasting machine, the combination with a toe rest, a heel lasting head having a heel band and wipers and movable rearwardly away from the toe rest to open the machine for taking out a lasted shoe, and a last carrier supported in the lasting head, of unjacking means arranged to delay the retraction of the last carrier until the toe supporting pressure of the toe rest has been relieved and then to free the shoe from the toe rest and from the band and wipers.

59. In a lasting machine having heel seat lasting mechanism including a longitudinally movable head, a heel band and wipers carried therein, and means for locking the head in operative position, means for retracting it, a last carrier, means to actuate the last carrier to jack the shoe back into the heel band, a spring to move the carrier reversely and means to lock the last carrier to the head, combined with unjacking means arranged to unlock the lasting head and for automatically unlocking the last carrier from the head before it retracts the shoe.

60. In a lasting machine the combination with an automatically retractable heel lasting head, means for locking it, an automatically forwardly pressed last carrier in the head, and means for locking it to the head, of connected means movable for unlocking the head and the carrier in time relation to delay the retraction of the shoe after the head has begun to move backwardly.

61. In a lasting machine the combination with a retractable heel lasting head, a track over which it travels, a last carrier, a ratchet faced hand wheel to retract the last carrier in the head, and a pawl carried on the head, to lock the hand wheel, of a rail on the track to be engaged by the pawl to hold it free from the hand wheel during the retraction of the lasting head, and means to disengage the pawl from the hand wheel and cause it to become engaged with the rail.

62. In a lasting machine the combination with a movable heel lasting head, means for locking it, a last carrier, means including the toothed hand wheel for retracting the last carrier relatively to the lasting head, and the pawl for locking the hand wheel, of the rockshaft arranged for operation automatically when the lasting head is unlocked and to withdraw the pawl from the hand wheel.

63. In a lasting machine the combination with a movable heel lasting head, a support

therefor, a last carrier, means for retracting the last carrier relatively to the head, and retaining means for holding the last carrier in its retracted position, of means for auto-

5 matically freeing the retaining means from the last carrier in time relation to the movement of the head on the support, and means for maintaining the retaining means free during the travel in one direction of the
10 head on its support and formed to allow it to act during travel in the other direction.

64. In a lasting machine the combination with a movable heel lasting head, a last carrier, means for retracting the last carrier
15 relatively to the lasting head, of means for locking the last carrier in its retracted position, of means operated in time relation with the movement of the lasting head for releasing the last carrier and means dependent
20 upon the position of the lasting head for permitting reengagement of the locking means with the last carrier.

65. In an end lasting machine, end embracing wipers each comprising a side section and an end section, and operating means
25 for imparting to the end section a combined advancing and laterally inward movement to close over the more curved portion of the end of the shoe and for imparting simultaneously to the side section an inward movement with less forward movement than is
30 imparted to the end section.

66. In a lasting machine, end embracing wipers each comprising a rear section, a side section with relation to which the rear section can slide longitudinally of the shoe, and operating means for turning inwardly and forwardly sliding the rear sections and for
40 imparting the required lasting movements to the side section.

67. A machine of the class described having, in combination, end lasting wipers comprising cooperating lasting plates each having relatively movable heel end, side and
45 shank members; and means for moving said members relatively during the closing of the wipers over the shoe bottom.

68. A machine of the class described having, in combination, end lasting wipers comprising cooperating plates each having a heel end member which advances and swings inwardly over the rear end and a corner of the heel, a side member which closes inwardly over the side of the heel, and a shank
55 member which swings backwardly and inwardly.

69. A machine of the class described having, in combination, end lasting wipers comprising cooperating lasting plates including
60 shank members which move rearwardly during the closing of the plates over the shoe bottom.

70. A machine of the class described having, in combination, end lasting wipers com-

prising cooperating lasting plates including
65 end members which move toward one another during the closing of the plates over the shoe; and a side member relatively to which said end members are moved.

71. A machine of the class described, having, in combination, end lasting wipers comprising cooperating lasting plates each including a side member which has a movement inwardly over the shoe bottom without
70 forwardly advancing movement, and a shank member movable with said side member and having an additional swinging movement backwardly.

72. A machine of the class described having, in combination, a wiper cam plate, operating means to advance and turn the cam plate, a wiper member rigid with said cam plate, a second wiper member connected to
80 said cam plate for turning movement thereby, and means for restraining the second member from advancing movement with the cam plate.

73. A machine of the class described having, in combination, end lasting wipers comprising a lasting plate, means for swinging it over the side of the heel of a last, a second lasting plate pivotally connected with the first-mentioned plate, and means for turning the second lasting plate about said pivot
90 automatically during the closing movement of the first-mentioned plate.

74. A machine of the class described having, in combination, two wipers constructed and arranged to embrace the heel portion of a shoe, each of said wipers comprising relatively movable members connected together, and means for operating said members to wipe the upper over the end and sides of a heel in directions substantially perpendicular to the edge portion of the heel at all
105 points.

75. A machine of the class described having, in combination, two wipers constructed and arranged to embrace an end portion of a shoe and mounted for relative turning
110 movement about an axis located substantially in the line in which their adjacent ends meet, one of said wipers being provided with a tongue located back of the wiping edges and curved in an arc about said axis and the other of said wipers having a recess shaped to receive said tongue and guide it during movement of the wipers about said axis.

76. A machine of the class described having, in combination, two wipers constructed and arranged to embrace an end portion of a shoe and mounted for relative turning movement about an axis located substantially in the line in which their adjacent ends meet,
120 one of said wipers being provided with a tongue located back of the said axis and of less thickness than the wiper, and the other

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wiper having in one face a seat of proper proportions to receive and guide the tongue flush with the surface of the wipers.

77. A machine of the class described having in combination, two wipers constructed and arranged to embrace an end portion of a shoe and mounted for relative turning movement about an axis, located substantially at their meeting ends, said wipers being provided in one face with a guideway located at a distance back from said axis and curved about said axis, and a tongue fitted

in said guideway and long enough to bridge the gap between the wipers in all of the relative positions which the wipers occupy during use.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

MATTHIAS BROCK.

Witnesses:

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402

F. W. MERRICK.
LASTING MACHINE.

APPLICATION FILED APR. 28, 1913.

1,245,117.

Patented Oct. 30, 1917.

7 SHEETS—SHEET 7.

Fig. 12.

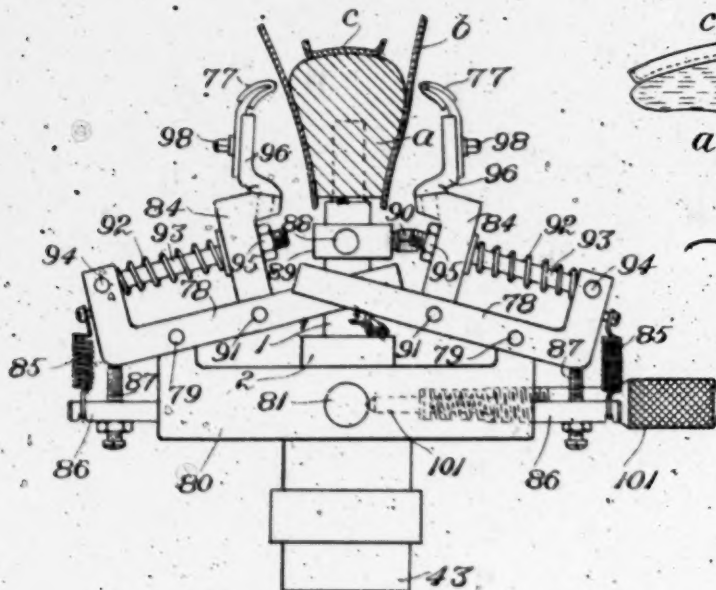


Fig. 11.

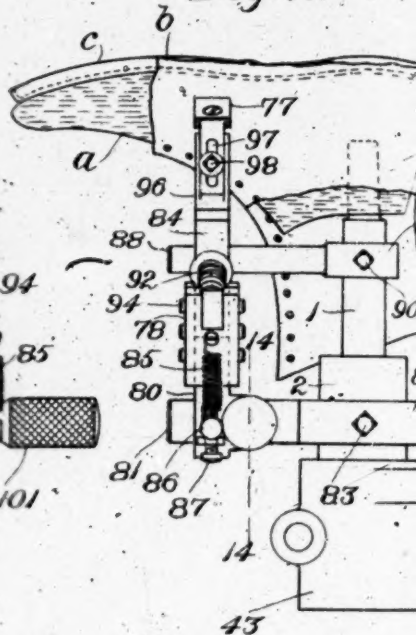


Fig. 13.

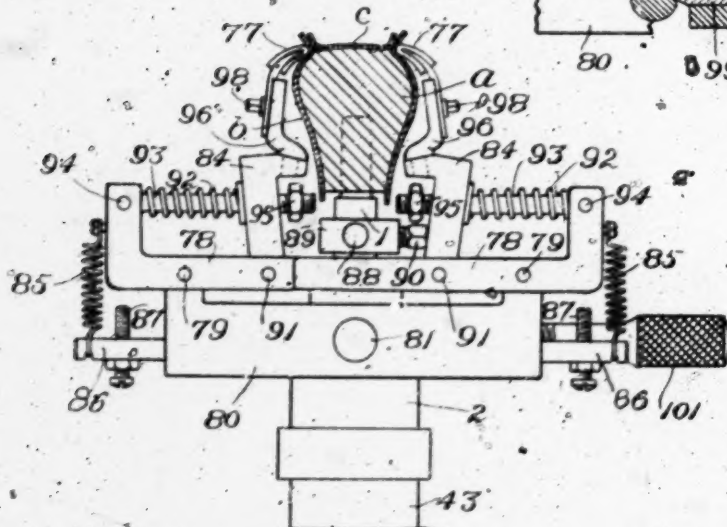


Fig. 14.



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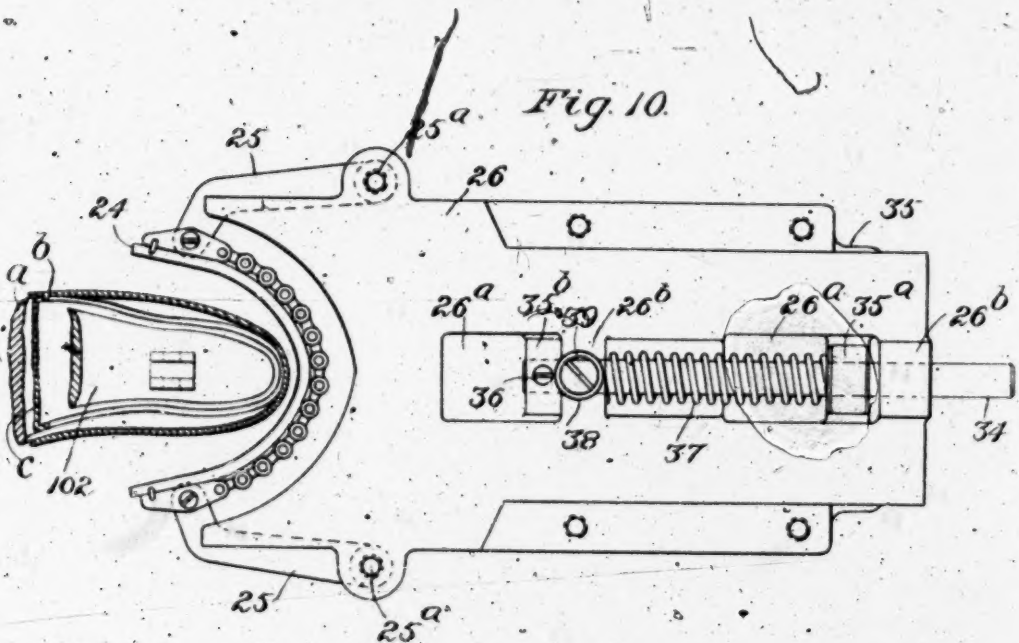
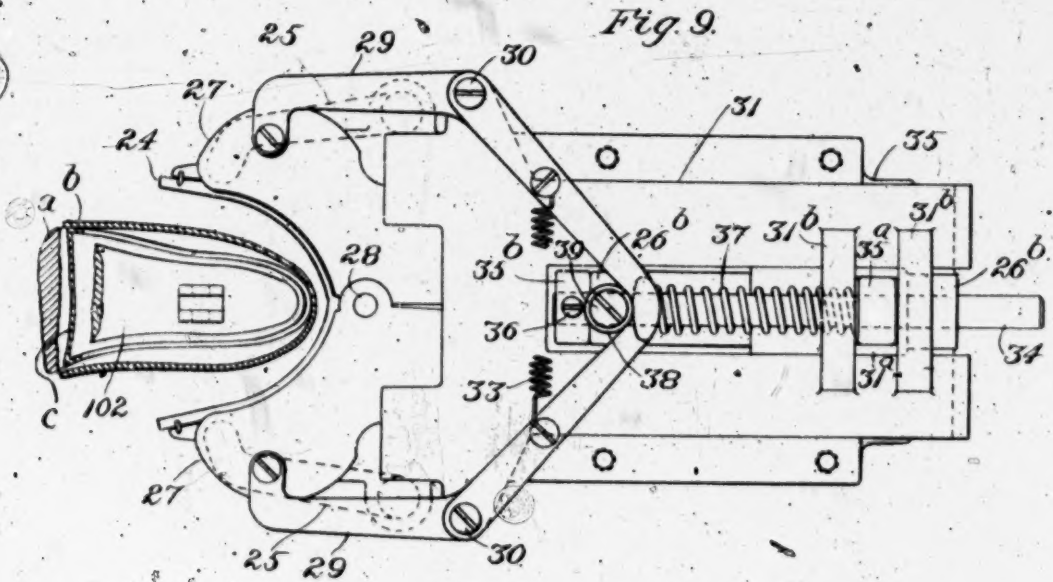
LASTING MACHINE.

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7 SHEETS—SHEET 6.



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7 SHEETS—SHEET 5.

1,245,117.

Fig. 8.

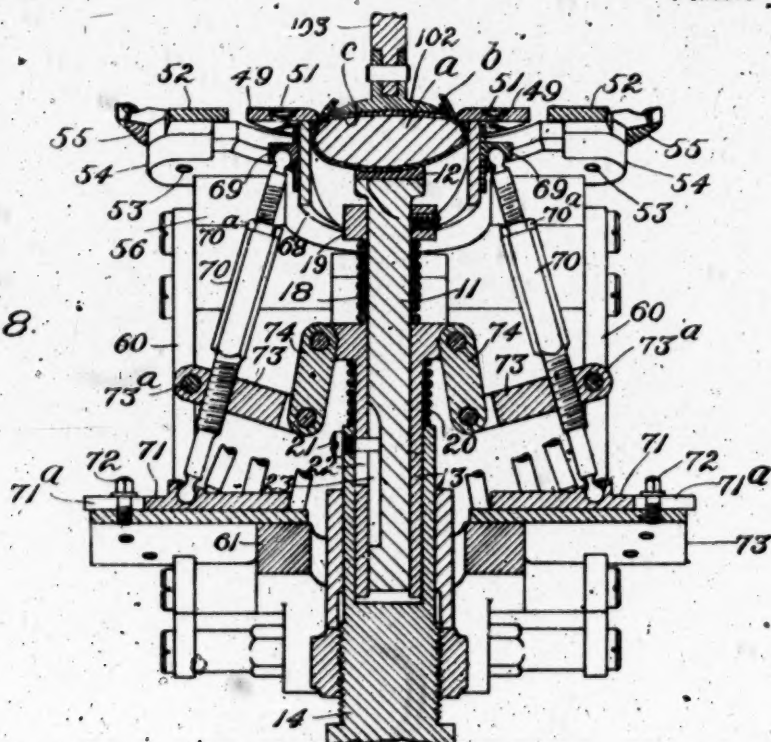
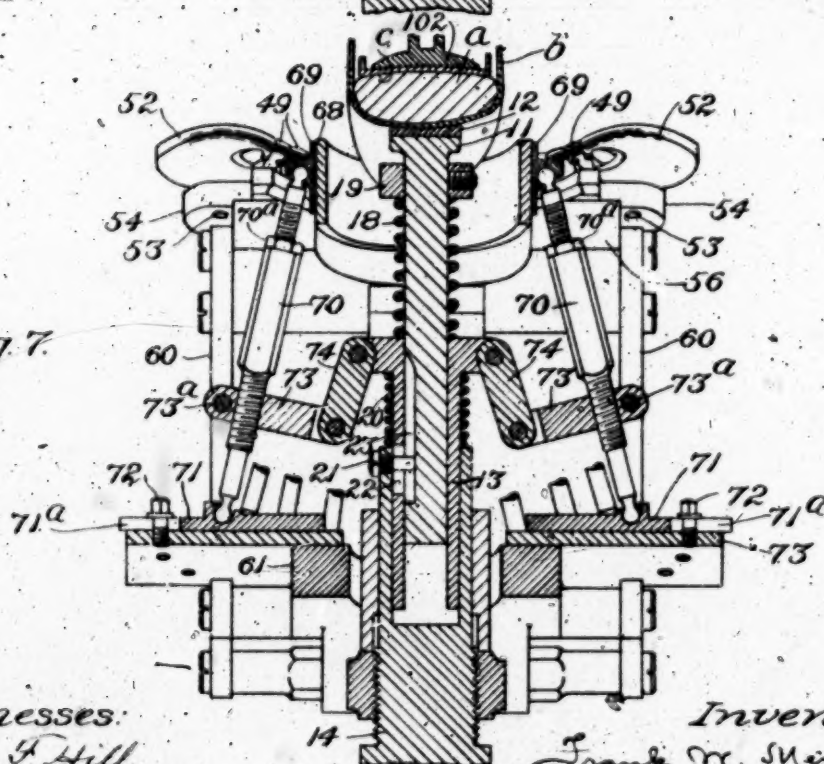


Fig. 7.



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7 SHEETS—SHEET 4.

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Fig. 5.

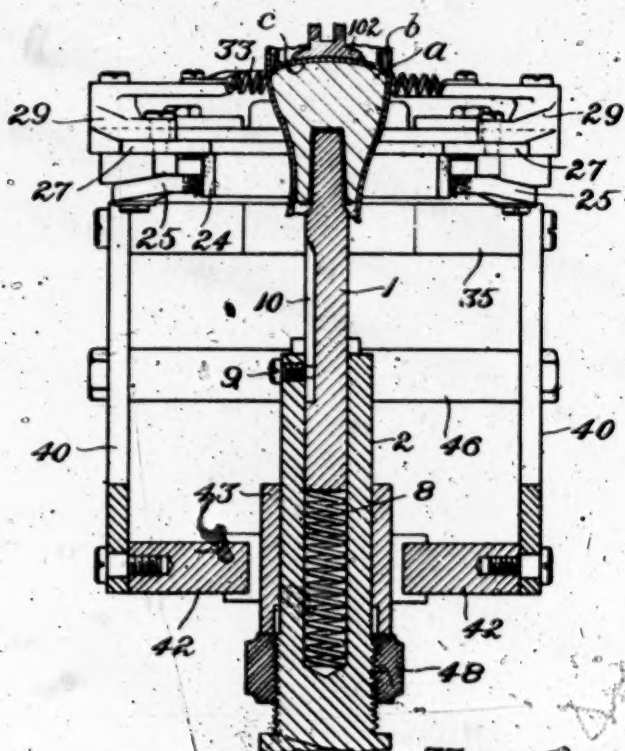
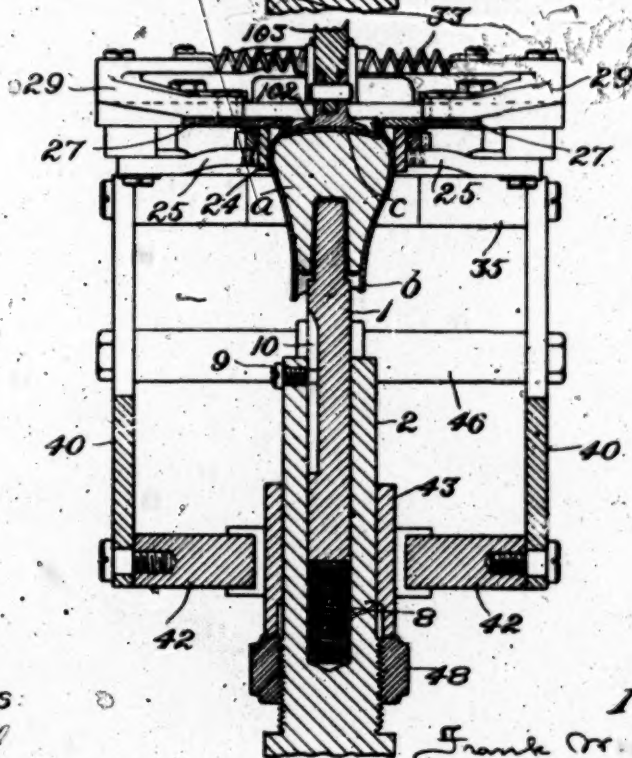


Fig. 6.



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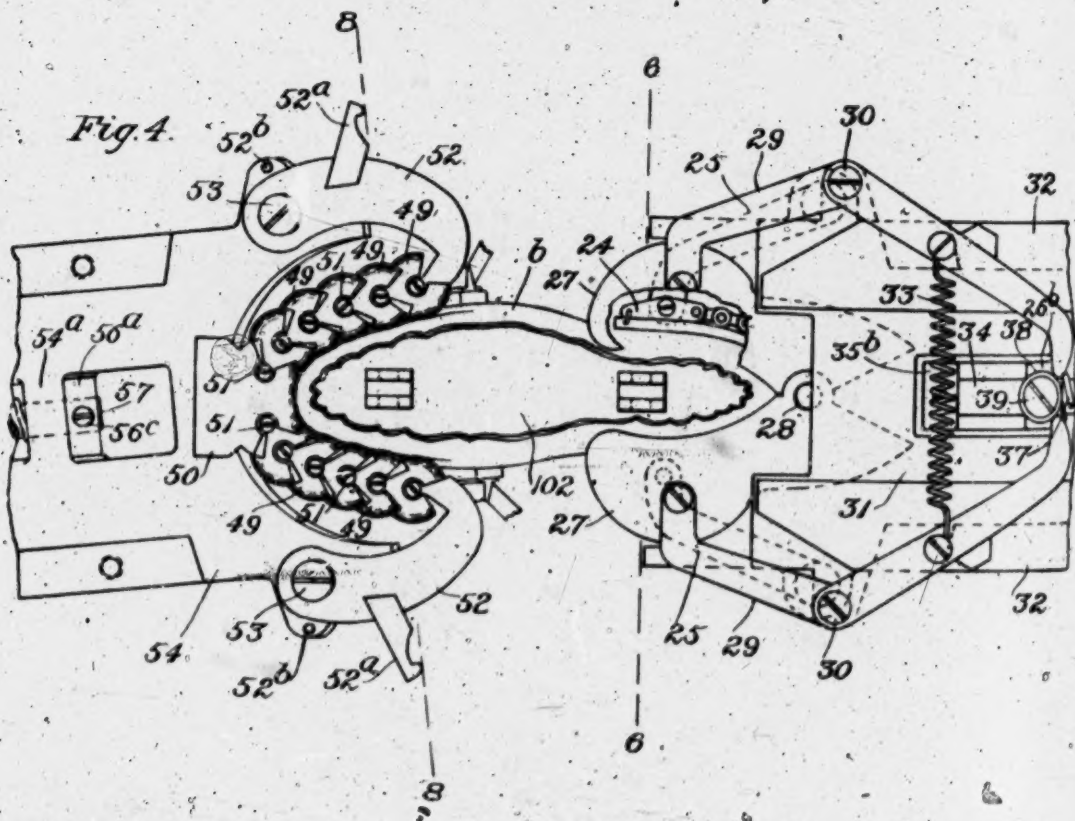
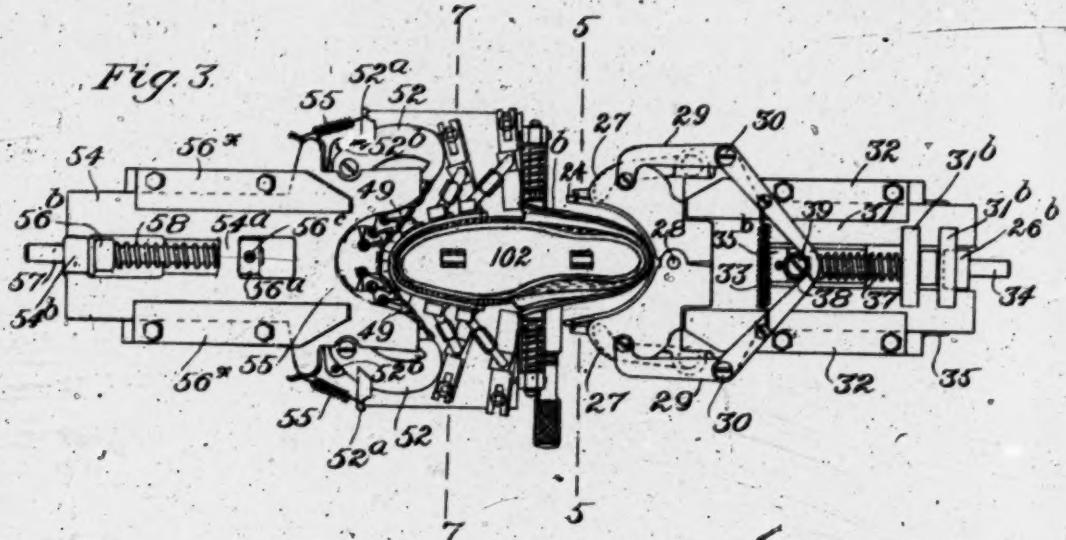
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1,243,117.

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7 SHEETS—SHEET 3.



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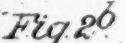
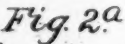
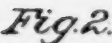
LASTING MACHINE.

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Patented Oct. 30, 1917.

7 SHEETS—SHEET 2.



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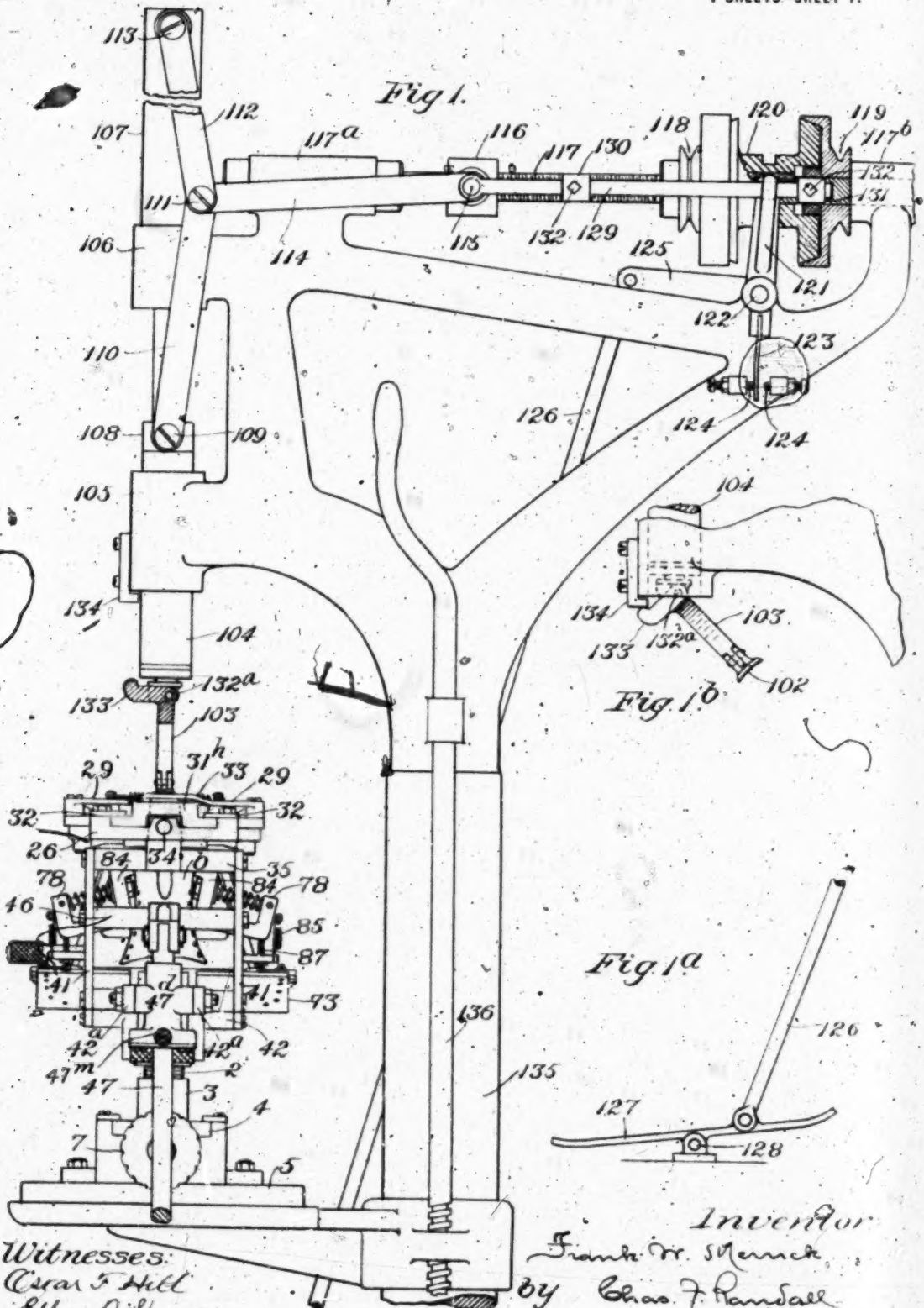
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LASTING MACHINE.

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Patented Oct. 30, 1917.

7 SHEETS—SHEET 1.

1,245,117.



UNITED STATES PATENT OFFICE.

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LASTING-MACHINE.

1,245,117.

Specification of Letters Patent.

Patented Oct. 30, 1917.

Application filed April 22, 1913. Serial No. 764,005.

To all whom it may concern:

Be it known that I, FRANK W. MERRICK, a citizen of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Lasting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

An important characteristic of the machine herein shown and described is that the coming together or relative approach of the last and upper, or lasted shoe as it may be termed, and the lasting devices serves to bring about the wiping of the upper about the last, or in other words to actuate the lasting devices to wipe the upper about the last.

The actuation for the purposes of the relative approach is effected by power means of ample power in proportion to the weight of the parts to be actuated and to the resistance to be overcome in the performance of the work, such power means being fully sensitive to the control of the operator, and instantly responsive to his control so as to enable him to occasion the approach or promptly stop it at any instant, or as promptly reverse it. Consequently if, after the operator has set the mechanism at work to cause the lasted shoe and the lasting devices to come together, he should observe a wrinkle in the lining, a displacement of some part of the shoe, an improper adjustment or displacement of some part of the machine, or some other fault requiring attention before the lasting operation is proceeded with, he may instantly arrest the approach or coming together, and if necessary may reverse the action so as to ease up on the pressure between the shoe and the lasting devices or may reverse far enough to provide for separating the shoe from the lasting devices.

The invention includes various novel features, certain of which are embodied in the means aforesaid for occasioning and controlling the relative approach of the lasted shoe and the lasting devices, and others are embodied in and in connection with the lasting devices.

Convenient embodiments of the various features of the invention are illustrated in the drawing, in which latter,—

Figure 1 shows in side elevation, with cer-

tain small portions in section, a machine embodying the features of the invention, the lower portion of the supporting standard being omitted, and the section of the depresser or hold-down being on the line 1, 1, of Fig. 2.

Fig. 1^a shows the treadle, omitted from Fig. 1, through which the operator controls the relative approach aforesaid.

Fig. 1^b is a detail view showing the depresser or hold-down in rearwardly retracted position.

Fig. 2, Sheet 2, shows the machine in front elevation, with certain small portions in section or partly broken away.

Fig. 2^a is a detail view partly in section and on an enlarged scale showing the construction and adjustment-provisions of one of the hand-levers for operating the heel and toe lasting devices.

Fig. 2^b is a view in horizontal section on line 2-2 of Fig. 2^a, looking upward.

Fig. 2^c is a detail view of the adjustment devices partly in vertical section.

Fig. 3, Sheet 3, is a plan view of certain parts below the dotted line 3, 3, Fig. 2.

Fig. 4, Sheet 3, is a plan view on an enlarged scale of certain of the parts which are shown in Fig. 3, representing them as closed together upon a shoe.

Fig. 5, Sheet 4, is a view in vertical section on line 5, 5, of Fig. 3, the last and shoe thereon being elevated relative to the heel-lasting devices, and the latter open.

Fig. 6, Sheet 4, is a view in vertical section on line 6, 6, of Fig. 4, the last and shoe being depressed within the heel-lasting devices, and the said devices closed together upon the shoe.

Fig. 7, Sheet 5, is a view in vertical section on line 7, 7, of Fig. 3, the last and shoe being elevated and the toe-lasting devices open.

Fig. 8, Sheet 5, is a view in section on line 8, 8, of Fig. 4, the last and shoe being depressed within the nest of lasting devices, and the said devices being closed together upon the shoe.

Fig. 9, Sheet 6, is a view of the heel-lasting devices and portions of a last and shoe, on an enlarged scale and with the holding-down gibs removed, the said devices being in open condition.

Fig. 10, Sheet 6, is a plan view of certain of the parts that are represented in Fig. 9, 110

with the heel wiper-plates, their carrying levers, and the carrying-plate for said levers, removed.

Fig. 11, Sheet 7, shows in front elevation the heel-pin, the supporting-post therefor, the waist or shank-lasting devices, and a last and portions of a shoe applied thereto, the last being elevated relative to the said lasting devices.

Fig. 12, Sheet 7, is a view looking from the left in Fig. 11, with the last and shoe thereon in vertical section.

Fig. 13, Sheet 7, is a view similar to Fig. 12 but showing the last and shoe depressed and the waist or shank-lastest closed together upon the shoe and last.

Fig. 14, Sheet 7, is a detail view, on an enlarged scale, of the means shown in Figs. 11 to 13 for keeping the waist or shank-lastest normally in a horizontal position.

Having reference to the drawings,—

In the various views in which the last and parts of a shoe are shown, the last is marked *a*, the upper *b*, and the insole *c*.

The last *a* is mounted in the machine upon a heel-pin 1, Figs. 2, 5, and 6, that is carried by a post 2 upon a slide or carriage 3, (Fig. 2,) mounted in guide-ways 4 upon a bed or platen 5, the said slide or carriage being adjustable upon the bed or platen in the direction of the length of the last, to suit the size of the last and shoe, by means of an adjusting screw 6 provided with a hand-wheel 7. The socket with which the last is provided to fit the upper end of the heel-pin, as in Figs. 5 and 6, is located at the approximate center of the curve of the back of the heel.

The heel-pin 1 is elastically mounted in order that it may have capacity for vertical movement. In the present instance, as shown in Figs. 5 and 6, it occupies a socket in the upper portion of the post 2, and is supported within the said socket by means of an expanding spiral spring 8. The said spring holds the heel-pin normally in its elevated position, the upward movement of the heel-pin under the action of the spring being limited by means of a stop-screw 9 applied to the upper end of the post 2. The inner end of the said stop-screw enters a longitudinal groove 10 formed in the heel-pin, and the engagement of the said inner end with the shoulder at the lower end of the said groove serves to determine the extent of the rise of the heel-pin and consequently fix the normal position of the latter.

A toe-rest is shown at 11, Figs. 7 and 8, Sheet 5, it having applied to its top a cushion 12 of leather or other material to avoid injury to the surface of the upper *b* which makes contact therewith. This toe-rest, like the heel-pin, is movable vertically and is elastically supported in an elevated normal

position shown in Fig. 7. In this instance it is mounted with the lower portion of its stem within a sleeve 13, which in turn fits within a socket in the upper portion of a supporting post 14. The said post 14 is provided upon a slide or carrier 15, Fig. 2, mounted in guides at 16 upon the bed or platen 5, and by means of a screw and hand-wheel 17 made adjustable in the direction of the length of the last. The elastic support of the toe-rest is furnished partly by means of an endwise expanding spiral spring 18 that surrounds the stem of the toe-rest between a collar 19 fixed on said stem and the upper end of the sleeve 13, and partly by an endwise expanding spiral spring 20 which surrounds the sleeve between a shoulder at the upper end of the sleeve and the top of the post 14. The two springs cooperate in supporting the toe-rest in a manner which causes the latter to occupy normally its elevated position. A stop-screw 21 applied to the upper end of the socket in the post 14 projects through a slot 22 in the sleeve 13 into a longitudinal groove 23 in the stem of the toe-rest. This stop-screw serves to hold the sleeve and toe-rest from turning relative to the post, and also to limit the extent of the rising movement of the sleeve and toe-rest through engagement with the bottom of the slot 22 and with the shoulder which is formed at the lower end of the groove 23. In some cases I dispense with the toe-rest.

A last with shoe thereon applied to the heel-pin and toe-rest is supported thereby normally in elevated position relative to the lasting devices somewhat above the position that is indicated in Figs. 5 and 7. The spring-mountings of the heel-pin and toe-rest permit the last and shoe to be depressed within the circle of the lasting devices.

The toe-rest is caused to occupy a position in line vertically with the approximate center of the curve of the toe of the last.

The heel-lasting devices comprise in the present instance a heel-band and heel-wipers or crimping plates.

The heel-band 24, as shown more particularly in Fig. 4, Sheet 3, and Figs. 9 and 10, Sheet 6, is of well-known construction, and is mounted by means of swinging supporting arms 25, 25, upon the heel-band carrying plate 26, the said arms being pivoted to the said plate at 25^a, 25^a, Fig. 10.

The heel-wipers or crimping plates 27, 27, Figs. 3, 4, and 9, are of well-known character, they being pivotally connected together at 28 and pivotally mounted upon actuating levers 29, 29, which are pivoted at 30, 30, upon the heel-wiper carrying plate 31, Fig. 9. The latter plate rests upon the heel-band carrying-plate 26 and is held in place thereon by means of removable gibs 32, 32, Fig. 3 and 4, in manner providing

for independent sliding movement of the heel-wiper plate 31 upon and with relation to the heel-band plate 26. The heel-wipers 27, 27, are held normally open or expanded as in Figs. 3 and 9 by means of a contracting spiral spring 33 connecting together the tail-portions of the wiper-actuating levers 29, 29.

To enable the heel-lasting devices to be swung or tipped bodily transversely, to suit or conform to the twist of the last, the plate 26 is mounted upon a longitudinal pin 34 carried by a carrier 35. The said pin 34 is mounted in lugs 35^a, 35^b, rising from said carrier, and entering openings 26^a, 26^b, in the plate 26; and is fixedly held in the lug 35^b by means of a clamping-screw 36. The plate 26 is mounted upon the said pin 34 by means of bearings at 26^b, 26^b, so that it is free to rock or swing or tip transversely.

For the purpose of enabling the heel-band and the wiper-plates 27, 27, to be caused to act upon the heel-portion of the shoe, the carrier 35 is movable lengthwise toward and from the heel-end of the last, and it is engaged with the two plates 26 and 31 in manner to actuate the latter in the same directions. In order that when the carrier 35 is moved toward the heel of the last the heel-band may be pressed yieldingly against the heel-portion of the upper on the last outside the counter of the shoe, an endwise expanding spiral spring cushion 37 is mounted on the pin 34 between one of the bearing-portions 26^b of plate 26 and the lug 35^a of the carrier 35. This spring acts to hold heel-band plates 26 longitudinally inward relative to the carrier 35 and heel-wiper carrying plate 31, with the inner bearing 26^b of plate 26 in contact with lug 35^b of the carrier 35. In the ingoing movement of the carrier 35 the said spring transmits pressure from the lug 35^a to the heel-band-plate 26 so that plate 26 moves in unison with said carrier until the heel-band brings up firmly around the heel-portions of the upper and last outside the counter of the shoe, and then the spring compresses during the remainder of the inward movement of the carrier, its tension continuing to hold the heel-band in close engagement with the heel-portions of the upper and last.

The lug 35^a of the carrier 35 also serves to actuate the heel-wiper plate 31 in a positive manner. To this end the said plate 31 is formed with a slot 31^a, Fig. 9, between transverse bridging portions 31^b, 31^b. The lug 35^a enters the said slot, and by engagement with the said bridging portions causes the heel-wiper plate 31 and heel-wipers, 27, 27, to accompany the carrier 35 in the longitudinal movements of the latter.

The heel-wipers 27, 27, are caused to swing toward each other during the longitudinal inward movement of the carrier and the

plates 26, 31, through the engagement of the tail-portions of the wiper-actuating levers 29, 29, with a roll 38 mounted upon a screw-stud 39 carried by the inner bearing-portion 26^b of heel-band plate 26. The said tail-portions overlap each other at the outer side of the said roll 38. The normal relations are as in Figs. 3 and 9. During the movement of the heel-band plate 26 and the wiper-carrying plate 31 inward in unison while the spring 37 holds the said inner bearing-portion 26^b of plate 26 in engagement with lug 35^b of the carrier 35, the spring 33, Fig. 9, holds the tail-portions of the wiper-actuating levers 29, 29, in engagement with the roll 38, with the wipers 27, 27, in their fully opened condition. When, however, the inward movement of the heel-band is arrested through contact with the last and shoe at the heel, so that the inward movement of its carrying-plate 26 ceases, the roll 38 remains stationary while the continued inward movement of the heel-wiper carrying plate 31 causes the tail-portions of the heel-wiper actuating levers 29, 29, to draw past the said roll 38 as in Fig. 4. The said tail-portions are curved at their extremities which make contact with the roll, and consequently in this continued inward movement of the heel-wiper plate 31 and heel-wipers the levers 29, 29, are caused to turn on their pivots 30, 30, and thereby close the heel-wipers 27, 27, toward each other. Fig. 4 shows the heel-wipers in their fully closed positions. In the subsequent outgoing movement of the carrier 35 the compressed spring 37 at first, through its tendency to expand, holds the heel-band pressed against the heel-portions of the upper and last. Meanwhile the movement of the heel-wiper carrying plate 31 in unison with said carrier carries the levers 29, 29, in the same direction relative to the roll 38 and relieves their pressure against the latter, so that the spring 33 is permitted to act to operate the said levers to open the heel-wipers apart from each other. The lug 35^b of carrier 35 then engages with the adjacent bearing 26^b and acts positively to cause plate 26 to accompany the carrier for the remainder of the outgoing movement of the latter.

The carrier 35 of the heel-lasting devices is movably mounted so as to be capable of inward and outward movement in the direction of the length of the last, and also of up and down movement. This capacity is secured by supporting the carrier 35 by means of pairs of parallel links 40, 41, upon a mounting 42 in connection with the slide or carrier 3 for the heel-pin. These parallel links cause the carrier 35 to remain parallel with its primary position throughout its entire range of movement. To provide for adjustment of the heel-lasting devices to suit the spring of the heel-portion of the last,

the mounting 42 is constructed and supported in manner providing for adjustment of the carrier 35 into a horizontal position or into one at any desired inclination longitudinally. In the present instance, the mounting 42 is made U-shaped to extend on opposite sides of a sleeve 43, Figs. 2, 5, and 6, mounted upon the post 2. The side-arms of the said mounting are connected pivotally at 44, Fig. 2, with the said sleeve 43 so that the mounting 42 is capable of swinging movement vertically. It is adjusted into the required position with reference to the horizontal by means of an adjusting-screw 45, Fig. 2. The adjustment of the mounting by means of the said adjusting screw results in a corresponding adjustment of the carrier 35 and the heel-lasting devices. The parallel links 40, 41, insure movement of the lasting devices toward and from the last always in parallelism, so that after the carrier has been adjusted into a horizontal or inclined position corresponding with the spring of the heel-portion of the last, the movement of the lasting devices toward the last shall always cause such devices to act in a plane parallel to the general plane of the upper surface of the last and insole at and adjacent the heel.

The pivots connecting the parallel links 40, 41, with the mounting 42 and the carrier 35 are so related to the inward limit of the inward movement of the lasting devices that during the final portion of the wiping action, and after the margin of the upper has been wiped inward and crimped, the wipers shall move downward or descend more or less gradually upon the portions of said margins that are engaged thereby, so as to press such portions more forcibly and more directly against the bottom of the insole, thereby applying a gradually increasing pressure at the same time that they perform the regular wiping and crimping action. This produces a tendency to break down and set the leather snugly against the insole.

For the convenient actuation of the carrier 35 of the heel-lasting devices, enabling such devices to be moved outward away from the position of the last and inward again into position to perform the preliminary wiping operation, as well as for the purpose of enabling the said carrier to be actuated by the workman to cause the said lasting devices to effect the final wiping and crimping action, the pair of parallel links 41 is connected by a yoke-shaped connecting member or link 46, Figs. 2, 5, and 6, with the upper arm of a hand-lever 47 which is pivoted upon and between outward extensions 42^a, 42^b, of the mounting 42. By swinging movement of this hand-lever the workman is able to move the carrier 35 and heel-lasting devices inward into position for

the said preliminary operation, and subsequently apply force to occasion the final wiping and crimping action and exert the direct pressure to break down and set the wiped-over and crimped portions of the upper. The relative proportions or lengths of the link 46 and the upper arm of the hand-lever 47, and the relations to one another of the pivots connecting said link to the links 41 and to the upper arm of the hand-lever, and the pivot supporting the said hand-lever upon the mounting, are such that the link 46 and the upper arm of the hand-lever constitute toggle-members and operate with a toggle-action and with progressively-increasing power in moving the heel-lasting devices inward with relation to the heel of the last. The final portion of the swing of the hand-lever to occasion such inward movement carries the pivotal connection 47^a between the link 46 and the upper arm of the hand-lever into line with the pivotal connection 46^a of link 46 with links 41 and the pivotal connection 47^b of the hand-lever with the extensions or arms 42^a, 42^b, of the mounting 42; this serving to exert the final powerful pressure and to lock the carrier in its inward position, maintaining the pressure of the wipers upon the crimped-over portions of leather.

For the purpose of enabling the range of the inward movement of the heel-lasting devices to be varied at will the length of the toggle-member constituted by the upper arm of the hand-lever 47 is made adjustable. Referring more particularly to Figs. 2 and 2^a, the hand-lever is formed in three parts. The first of these is a handle-portion 47^c having an upwardly extended spindle-portion 47^d, the extremity 47^e of which is reduced and screw-threaded. The second is a hub-portion 47^f, which receives the said spindle, this hub-portion being mounted upon cone centers 47^g, 47^h, carried by the extensions or arms 42^a, 42^b, of the mounting 42. The third is an adjustable connecting member 47ⁱ, which has its lower portion entered into the bore of the hub-portion 47^f and internally socketed and screw-threaded to receive and engage with the screw-threaded upper extremity 47^e of the spindle 47^d. The upper portion of this connecting-member 47ⁱ is flattened and fitted between opposite lugs of the link 46, it being connected with the said lugs by means of a pivot 47^j. The handle-portion 47^c may be rotated by the workman, in which case the spindle 47^d will turn within the bore of the hub-portion, and when the handle-portion is rotated the screw-threaded connection between the spindle 47^d and the connecting-member 47ⁱ operates to adjust the said piece 47ⁱ in or out of the hub-member 47^f so as to decrease or increase the effective length of the upper arm of the hand-lever. Any convenient

means may be provided for insuring against accidental rotation of the handle-portion 47^a. In the present instance, a notched wheel or collar 47^b, shown in dotted lines in Figs. 2^a and 2^b, is provided upon the spindle-portion 47^c, and in a radial hole in the lower portion of the hub 47^d a ball 47^e, shown best in Fig. 2^c, is placed, the said ball being backed up by an endwise expanding spiral spring 47^f, the tension of which is adjusted by means of an adjusting screw 47^g. The engagement of the said ball in one of the notches of the wheel or collar 47^b operates to resist any tendency of the handle-portion 47^a to rotate accidentally, but the exertion of sufficient force by the workman will enable the said handle-portion to be rotated to the extent required.

The sleeve 43 by which the mounting 42 is supported is itself afforded vertical support by a collar 48 upon the post 2. The sleeve is revoluble upon the portion of the said post above the said collar, so that the heel-lasting devices may be swung transversely around the said post, and consequently around the axis of the heel-pin, into any position required to suit the swing of the last.

The position of the heel-lasting devices is made adjustable vertically by vertical adjustment of the collar 48 upon the post 2. This adjustment is provided for in the present instance by internally threading the said collar, as in Figs. 5 and 6, and fitting it to a screw-threaded portion of the post. The knurled exterior of the collar enables the collar to be readily turned by hand in making this adjustment.

The general construction and arrangement for supporting, adjusting, and operating the heel-wiper or crimping-plates is applicable also in connection with toe-wiper or crimping devices, and I have shown a substantially similar construction and arrangement applied in the latter connection. I may employ in practice any usual or preferred form and construction of toe-wiper or crimping devices, as, for instance, wiper-plates more or less closely approximating in character, construction, and means and mode of operation, the heel-wiper or crimping-plates 27, 27. I have shown, however, a form of toe-wiping and crimping devices which I prefer and embodying certain features of invention.

Referring now to the preferred construction of toe-wiper and crimping devices, and viewing more particularly Figs. 3 and 4, the immediate wiping or crimping agent is a flexible chain composed of a series of links 49, 50, 49, connected together by pivots 51 so as to be capable of free play or flexure in the plane of the chain. The end links also are engaged by pivots with two sup-

porting arms 52, 52, which are mounted pivotally at 53, 53, upon the toe-wiper carrying plate 54 at opposite sides of the latter. The intermediate link 50 is larger than those at either side of it, and its back-portion rests upon the plate 54 so that the middle portion of the chain is thereby afforded vertical support. The chain is disposed in the form of a U-shaped bend, and normally is held expanded widthwise through the action of contracting springs 55, 55, which are engaged with projections 52^a, 52^a, from the arms 52, 52, and tend to move the arms away from each other, the extent of the separating movement being limited by means of stop-pins 52^b, 52^b, upon the plate 54. The arms 52, 52, rest upon extensions of the toe-wiper carrying plate 54 and are supported thereby against downwardly acting pressure. A cover plate 55 removably held in place upon plate 54 by detachable gibs 56^a, 56^a, projects over the middle link 50 and some of the side-links adjacent the arms 52, 52, and thereby holds the toe-wiper and crimping-chain downward against upwardly-acting pressure tending to force the chain upward.

The toe-wiper and crimping chain is a floating flexible device which accommodates itself to the shape and position of the toe-portion of the last. In other words, it conforms automatically to the shape and swing of the said toe-portion. Each of the links 49 thereof has a radial V-shaped notch, and an opposite radial V-shaped arm to occupy the notch of the next adjacent link, the said arm having an extension which overlaps the central portion of the latter link and occupies a counterbore therein as in Fig. 8, and the said extension and the said central portion having holes therein which receive the connecting pivot 51. The said pivot is a screw-pivot having the thread located on the lower portion of its stem to engage an internal thread of the central hole of the second link, a plain portion of the said stem being fitted within the hole in the overlapping extension of the first link. The outer and inner edges of the links are curved concentrically with respect to the centers of the pivots 51, as shown in Fig. 4; and inwardly concave-edged lateral portions of one link fit outside the curved convex edge-portions of the next link, so that the links overlap and work upon one another in the same plane without any opening or crack at the inner edge of the chain into which the upper can enter so as to be pinched and cut. The inner edges of the segments are rounded vertically so as to obviate injury to the upper leather by scraping or scratching the same during the wiping and crimping action. The supporting arms 52, 52, are connected with the terminal

links 49, 49 by means of V-shaped projections and pivots, the said projections occupying V-shaped notches in the said terminal links. The connection between the large intermediate link 50 and the links 49, 49, next adjacent the same is effected by means of the V-shaped arms of the latter links occupying V-shaped notches at the opposite ends of the link 50, the said arms being engaged with the link 50 by pivots 51, 51, as shown.

The toe-wiper carrying plate 54 and the cover-plate 55 are mounted upon a carrier 56 by means of a longitudinal pin 57, upon which the plate 54 and parts carried by it are capable of rocking or tilting transversely to conform to the twist of the forepart of the last. The said pin is mounted in lugs 56^a, 56^b, on the carrier 56, and the plate 54 is furnished with bearings 54^a, 54^b, adapted to turn and slide on the said pin. The pin is fixed in the lug 56^a by means of a clamping screw 56^c. Between the inner bearing, 54^a of plate 54, and the outer lug, 56^b, of the carrier 56 the pin is surrounded by an end-wise expanding spiral spring 58. This spring normally holds the toe-wiper carrying plate 54 pressed inwardly relatively to the carrier 56, with the bearing portion 54^a pressed against the lug 56^a. When the carrier is moved longitudinally inward toward the toe of the last the toe-wiper plate moves in unison therewith until the working edge of the toe-wiper chain comes into contact with the upper around the toe-portion of the last. The spring 58 yields under continued inward movement of the carrier and its tension holds the chain pressed against the upper.

The carrier 56 of the toe-wiper devices is combined by means of pairs of parallel links 59, 60, with a mounting 61 that is pivoted at 62 to a sleeve 63 surrounding the upper portion of the post 14. The said sleeve is adapted to turn around the said post to enable the toe-wiper devices to be swung transversely in an arc concentric with the curve of the end of the toe of the last. This swinging movement, as will be apparent, is to enable the toe-wiper devices to be positioned properly to suit the swing of the forepart of the last.

To enable the plane of the toe-wiper devices to be adjusted with reference to the horizontal to suit the spring of the forepart of the last, the adjusting-screw 64 is applied to an arm extending out from sleeve 63, the said adjusting-screw engaging with the mounting 61 and serving to give the said mounting, the carrier 56, and the toe-wiper devices a greater or less degree of inclination. The internally threaded collar 65 fitted upon the screw-threaded lower portion of the post 14, and upon which the

sleeve 63 rests vertically, provides for adjustment of the toe-wiper devices bodily up or down vertically to suit the last employed.

The longitudinal movement of the carrier 56 and the toe-wiper devices thereon toward and from the toe-portion of the last is provided for by means of a hand-lever 66 corresponding with the hand-lever 47 of the heel-lasting devices, and a link 67 connecting the upper arm of the said hand-lever 66 with the carrier 56. The mode of operation and means of adjustment in the case of the hand-lever 66 are the same as in the case of the hand-lever 47.

For the purpose of drawing the vamp snugly against the under portion of the last and causing it to fit against the surface of the said portion, any well-known or approved girth-device or vamp-stretcher device may be employed. I have shown a form of wiper-device comprising a wide band 68, Figs. 2, 7 and 8, of leather having its width disposed vertically, the said band being held in U-shape to extend horizontally about the fore-part of the last, and supported in a working position just below the toe-wiper and crimping chain 49, 50. For the support of the vamp-wiper band 68 small brackets 69, 69, are fastened to its outer side, these brackets having downturned sockets which receive the ball-shaped upper ends of posts 70, 70, having their ball-shaped lower ends entered into sockets in stands 71, 71, fastened by screws 72, 72, to a plate 73 on the mounting 61. Thereby the vamp-wiper band 68 is supported upon the mounting 61. In order to provide for adjustment of the height of the vamp-wiper band 68, or of different portions thereof, the posts 70, 70, are made adjustable in length. In this instance the adjustability is secured by making each post in two portions; namely, a lower portion having an internally threaded socket in its upper part, and an externally threaded upper portion screwing into the said socket and provided with a lock-nut 70^a to prevent loss of adjustment. The posts 70, 70, at the ends of the band 68 are mounted upon the mounting 61 immediately above the pivotal axis on which the said mounting swings vertically. Consequently the said ends are not raised or lowered when the mounting is swung up or down. But when the mounting occupies its downwardly inclined position shown in Fig. 2, the band 68 as a whole occupies an outwardly and downwardly inclined position, its bend or bight being lowest. Consequently, after the last with a shoe thereon has been placed in position within the nest of lasting devices and has been pushed down within the vamp-band, if then the mounting 61 is swung upward, from its inclined position in Fig. 2, the bend or bight of the

vamp-band 68 will swing upward about the toe-portion of the last, pivoting about the tops of the posts at the ends of such band, thereby wiping the toe-portion of the vamp upward.

Referring more particularly to Figs. 7 and 8, the posts 70, 70, which are in line transversely with the stem of the toe-rest have inwardly extending arms 73, 73, mounted thereon, the said arms being connected by links 74, 74, to the upper end of the sleeve 13 surrounding the said stem. As has been described, the sleeve 13 normally is held in an elevated position by means of the spring 20. When the sleeve is elevated it acts through the described connections to hold the said posts outward and the sides of the vamp-wiper band 68 apart from each other. When the toe-rest is pressed down, compressing the spring 18 which rests upon the upper end of the sleeve 13 and thereby forcing the sleeve 13 down against the resistance of the spring 20, the downward movement which is transmitted from such sleeve through the links 74, 74, to the arms 73, 73, operates to swing the upper ends of the said posts inward, and the sides of the vamp-wiper band 68 toward and against the opposite sides of the upper surrounding the last for the desired wiping engagement therewith. Arms 73, 73, are made adjustable vertically upon the posts 70, 70, to which such arms are attached, to vary the extent to which the said posts are swung outward and the opposite side-portions of the vamp-band spread apart by the rise of sleeve 13. Also to vary the effect in pressing the side-portions of the vamp-wiper band 68 toward each other when the toe-rest is pressed downward. This adjustability is secured by forming an external screw-thread upon the lower portion of each post 70, and internally threading the holes in the arms 73 into which the posts fit. By turning the posts within said holes the arms are screwed up or down as required.

The remaining posts 70, 70, respectively are swung inward toward the vertical axis of the toe-rest by means of contracting spiral springs 75, Fig. 2, which are engaged with inwardly-projecting arms 76 upon the said posts, such arms corresponding with the arms 73 and being vertically adjustable upon the posts in the same manner as arms 73. The tension of the springs 75 operates to draw the said posts inward until the arms 76 make contact with stop-pins 76' upon mounting 61. The said stop-pins determine the normal positions of such posts and of the corresponding portions of the vamp-wiper band 68. Such positions may be varied by vertical adjustment of the stop-pins, or by adjustment of the arms 76, 76, up or down upon the posts. This latter adjustment also varies the tension of the springs

75. By proper manipulation, the normal positions may be adjusted without varying the tension, and vice versa.

As a further means of enabling the wiping efficiency of the vamp-wiper band 68 to be varied, the stands 71, 71, Figs. 7 and 8, are made adjustable radially so that the posts 70, 70, may be set in positions more or less approximating vertical positions, or more or less inclining downwardly and outwardly from the vertical. For this adjustment the said stands 71 are slotted at 71^a, 71^a, to receive the stems of the screws 72, 72, the slots permitting the stands to be shifted radially as aforesaid. Referring to Figs. 7 and 8 as representing the inclination aforesaid of the posts, and it being assumed that as the last with shoe thereon is moved downward from its elevated position in Fig. 7, thereby depressing the toe-rest, the vamp-wiper band 68 will be closed inward against the upper sides of the last and around the toe-portion of the last, it will be understood that there will be friction between the vamp-wiper band and the upper. This friction will tend to carry the vamp-wiper band downward with the last and shoe. Any downward pressure upon the vamp-wiper band in Fig. 8 will naturally tend to cause the upper ends of the posts 70, 70, to swing downward and inward so as to approach each other more closely. Consequently, with the supporting posts 70, 70, set at converging inclinations as in Fig. 8, the frictional engagement between the upper and the vamp-wiper band, operating as aforesaid with a tendency to move the vamp-wiper band downward, will itself tend to cause the vamp-wiper band to press more firmly against the upper and toward the surface of the last and hence will correspondingly increase the wiping efficiency of the band. The greater the inclination of the posts, the more powerful will be the action; the more nearly vertical the posts, the less powerful will it be.

As a convenient means of preventing accidental displacement of the arms 73, 76, upon the threaded portions of the posts 70, 70, the internally threaded socket-portion of each of the said arms may be slitted vertically, and have a tightening bolt 73^a combined with the portions at opposite sides of the slit to enable them to be drawn together so as to cause the internally threaded socket to bind upon the externally threaded portion of the post.

Waist-lasting devices embodying features of the invention are shown in place in the machine in Fig. 2, and separately in detail in Figs. 11, 12, 13 and 14 of Sheet 7. The said devices comprise opposite waist-wipers 77, 77, disposed in proper relation to the waist-portion of the last, and swinging carriers 78, 78, for the said wipers. The waist-

wipers extend upwardly from the carriers, which are pivoted at 79, 79, upon a mounting 80 supported by a pin 81 extending from a collar 82 secured by a clamping-screw 83 upon the post 2 above the sleeve 43. The said mounting is adjustable along the pin 81, toward and from the heel-pin 1. The pivots 79, 79, are located at points at the front and rear sides, respectively, of the last. The waist-wipers 77, are carried by supports 84, 84, that rise from the carriers 78, 78, intermediate the position of the last and the pivots 79, 79. Contracting spiral springs 85, 85, connecting with the supports 78, 78, and with pins 86, 86, projecting from the mounting 80 operate to hold the carriers 78, 78, normally in the positions occupied by them in Fig. 12; namely, in engagement with adjustable stops 87, 87, projecting from said pins 86, 86, and with the wipers elevated. As thus elevated the said wipers are separated a distance greater than the width of a last.

For the purpose of causing the waist-wipers 77, 77, to close together against the opposite sides of the last so as to engage with the waist-portions of the upper surrounding the last and wipe the same upwardly, tightly and smoothly around the waist-portion of the last, the carriers 78, 78, are provided with inward extensions which cross below an actuating pin 88 carried by a collar 89 that is adjustably fixed at the required height upon the heel-pin 1 by means of a clamping-screw 90. At the proper point in the descent of the last with the upper thereon, the pin 88 strikes the crossing portions of the supports 78, 78, such portions being in its path, and by pressing such portions down it operates to swing the carriers 78, 78, upon their pivots 79, 79. This action operates in turn to swing the waist-wipers 77, 77, toward each other so as to close against the opposite sides of the last at its waist. By reason of the fact that the pin 88 engages with the extensions of the carriers 78, 78, at a greater distance horizontally from the pivots 79, 79, than the pivots 91, 91, connecting the supports 84, 84, of the waist-wipers 77, 77, with carriers 78, 78, it follows that although the downward swinging movement of the wiper-carriers 78, 78, causes the waist-wipers 77, 77, to move downward simultaneously with the last, the said wipers move downward a less distance than the last and at a slower rate of speed. Consequently, the net result is that the last descends between the waist-wipers faster than the latter descend, so that as a result of the differential movement the waist-wipers act to wipe the waist-portions of the upper upwardly about the waist-portion of the last.

In order that the movement of the waist-wipers 77, 77, downward and toward the

last may occasion a yielding pressure of the said wipers against the upper, the supports 84, 84, of the wipers are pivoted as at 91, 91, to the carriers 78, 78, and are backed up by endwise expanding springs 92, 92. These springs are mounted upon pins 93, 93, which are pivoted by their outer ends at 94, 94, to upturned portions of the carriers 78. The screw-threaded inner ends of the said pins pass through holes in the pivoted supports 84, 84, and are furnished with stop-nuts 95, 95, to limit the extent of the inward movement of the said pivoted supports under the action of the springs 92, 92. The said springs surround the pins 93, 93, between the pivoted supports 84, 84, and the said upturned portions of the carriers 78, 78.

In order that the waist-wipers 77, 77, may conform to the direction of the sides of the last at the waist, they are mounted with capacity to swivel transversely. To this end the little stands 96, 96, to which the said wipers are attached are connected with the pivoted supports 84, 84, by means of pintles at their lower ends fitting sockets in the pivoted supports 84, 84. This mode of mounting the wipers upon the pivoted supports enables them to swivel in a horizontal direction. The shanks of the waist-wipers 77, 77, are slotted lengthwise at 97, Fig. 11, for the passage of the stems of the bolts 98, 98, which attach the wipers to the stands 96, 96. This permits an adjustment of the said wipers up and down upon their carrying means.

The mounting 80 for the waist-lasting devices is caused to tend to remain normally in horizontal position, but is adapted to be swung vertically in either direction when required, as for instance to enable the relative position of the waist-wipers 77, 77, to conform to the differences between right and left lasts respectively. A simple arrangement for causing the mounting 80 to remain normally in horizontal position while permitting it to be swung with slight effort is shown in Figs. 11 to 14. In these views the supporting pin 81 is formed with a longitudinal V-shaped groove 81^a, Fig. 14, in one side thereof and within a socket in a portion of the carrier 80 is contained a conically pointed pin 99. This pin is capable of sliding lengthwise within the said socket, its headed end being acted upon by an expanding spiral spring 100 which presses the pin endwise so that the tip of its conical point shall enter and remain in the V-groove 81. While the tip of the pin is held in the V-groove, the effect is to cause the carrier to remain normally in its horizontal position, but upon the application of sufficient force to the parts tending to swing the carrier vertically in one direction or the other the inclination of the side of the groove 81 against which the tip of the pin

99 will be carried by the swinging movement will press the pin back endwise against the resistance of the spring, allowing the carrier to be rocked. If the swinging movement of the carrier is not great enough to shift the point of the pin 99 entirely out of the V-groove 81^a, the carrier will be returned automatically to its normal position when free to do so. In order to enable the carrier to be locked positively in its normal position when desired, a screw-threaded pin 101 has its threaded portion fitted to the internally threaded portion of the socket in the carrier 80. A prolongation of the said screw-threaded pin passes through the center of the spring 100, and when the screw-threaded pin is screwed inward within the socket, the end of this reduced prolongation presses against the head of the pin 99 so as to force the point of pin 99 fully home into the V-groove 81^a in the supporting-pin 81. To facilitate the turning of the screw-threaded pin 101 for the purpose just explained its projecting outer end is knurled to enable a better grasp of the same to be had by the workman.

The normal position of the heel-pin and toe-rest, elevated above the nest or circle of lasting devices, facilitates the application thereto of a last with shoe upper, etc., thereon. When first applied the last and shoe stand up more or less above the lasting devices, in full view and sufficiently clear of such devices to enable the operator to adjust the upper or lining or otherwise prepare for the lasting. While the last and shoe are thus relatively elevated, the carrier 35 of the heel-lasting devices may be shifted by hand toward the last so as to place the said devices in working relations with respect to the heel-portion of the shoe; that is to say, against or close to the upper around the smaller portion of the last below the swell or enlargement of the heel. In like manner, the carrier 56 of the toe-lasting devices may be shifted by hand toward the last so as to place the latter devices in working relations with the toe-portion of the shoe; that is to say, somewhat in under the overhanging, side-portions and toe-portion of the forepart of the last.

For the purposes of the lasting operations the last and shoe are depressed within the nest or circle of the lasting devices, so as to cause the latter to wipe the different portions of the upper upward smoothly about the last. I provide for the purpose a device which constitutes both a depressor and a hold-down. In addition to forcing the last and shoe down within the nest or circle of the lasting devices, as aforesaid, for the purpose of effecting the preliminary wiping operation, it serves to hold the last and shoe down while the final operations are being performed.

The depressor or hold-down 102 is connected by means of a yoke 103, Figs. 1 and 2, with the lower end of an upright plunger-rod 104 which slides in fixed guides 105, 106, in connection with the upper portion of the machine frame-work. The upper portion of the said plunger-rod working in the fixed guide 106 is of reduced diameter and enters an upward extension 107 of said guide. The plunger-rod and the presser or hold-down may if desired be arranged to be actuated by the power of the workman, conveniently applied, but preferably I utilize mechanical power applied at the will of the workman. To this end a block 108 is mounted upon the lower portion of the reduced part of the plunger-rod, the said block resting against the shoulder at the top of the large lower portion of the plunger-rod, and to the opposite sides of this block are connected by pivots 109, 109, the lower ends of the lower links or members 110, 110, of a pair of actuating toggles. The upper ends of the said links or members 110, 110, are connected by pivots 111, 111, to the lower ends of an upper pair of toggle-links or members 112, 112, the upper ends of which in turn are connected by pivots 113, 113, to the upper end of the extension 107 of the guide 106 for the plunger-rod. For the actuation of the toggles, the intermediate pivots 111, 111, thereof are connected by links 114, 114, to pivots 115, 115, at opposite sides of a traveler nut 116, on an actuating screw 117. The said screw is suitably journaled in bearings 117^a, 117^b, in the upper part of the machine frame and is provided with means for rotating it in either direction so as to operate the traveler-nut and toggles as required for the purpose of moving the depressor or hold-down down or raising it.

The duplication of the toggles at opposite sides of the plunger-rod, and the connection of the respective toggles to the respective sides of the traveler-nut, are designed to secure balanced action and to avoid tendency to turning of the plunger-rod and depressor or hold-down, and cramping of the actuating connections.

For the convenient actuation of the screw 117 by power, I provide, preferably, a reversible drive mechanism, which in this latter instance is of a well-known type, it comprising pulleys 118, 119, grooved for the reception of driving bands and mounted to turn loosely upon the plain portion of the shaft of the said screw beyond the screw-thread. The said pulleys are in practice driven in opposite directions by a straight driving band and a crossed one, respectively. Gear-wheels loosely mounted upon the screw-shaft and driven in opposite directions by connecting gearing might be employed instead, as sometimes in practice. Upon the

screw-shaft between the two rotating loose wheels 118, 119, is mounted a clutch-member 120 adapted to engage with either of the said wheels. The said clutch-member is splined to the screw-shaft, as usual, to cause it to turn in unison with the latter, while permitting it to be slid lengthwise thereon. Preferably, the cooperating portions of the loose wheels and the intermediate clutch-member are arranged to act by frictional engagement with each other, and in this instance are reversely cone-shaped as shown in Fig. 1, the sliding clutch-member being formed as a double cone, and the loose rotating wheels being cupped out to receive the engaging portions of the said sliding clutch-member. Other forms of frictional engagement may be utilized, or a positive clutch arrangement may be substituted.

The shifter or controller 121 for the movable clutch-member 120 is mounted pivotally at 122 upon the machine-frame. It is held normally in an intermediate position, with said clutch-member in a neutral position out of engagement with both wheels 118, 119, through the action of a leaf-spring 123. The said spring is carried by the clutch-shifter or controller, its free end being entered between contacts or abutments 124, 124, on the machine-frame. Movement of the clutch-shifter or controller to cause the shifting clutch-member to engage one or the other of the rotating wheels carries the spring against one or the other of the contacts or abutments. Thereby, the spring is bent, and thus it is placed under tension. When the clutch-shifter or controller is left free by the workman, the tendency of the spring to resume its normal form causes it, by pressure against such contact or abutment, to restore the shifting clutch-member to its normal intermediate position.

For the convenient manual control of the clutch-shifter or controller, an arm 125 thereof is connected by a rod 126 to a treadle 127, Fig. 1^a. The pivotal mounting 128 of the said treadle is located at an intermediate point in the length of the treadle, so that by rocking the treadle in one direction upon its fulcrum the clutch-shifter or controller and shifting clutch-member may be operated to connect one of the rotating wheels with the screw-shaft, to rotate the latter in one direction; and by rocking the treadle in the other direction the said shifting clutch-member may be caused to connect the other rotating wheel with the screw-shaft, to rotate the latter in the opposite direction. Thereby, the workman is enabled to control the actuation of the depressor or hold-down, so that he may at will cause the latter to descend, remain stationary, or ascend. The described driving connections for the screw-shaft enable the ascending or descending

movement of the depressor or hold-down to be instantly arrested at any point, so that in case the workman should perceive anything to be wrong during the descent of the last and shoe within the lasting devices he can promptly arrest such descent and thus avoid or lessen injury to the shoe.

In order to automatically unclutch the driving connections of the screw 117 when the proper extent of movement of the plunger-rod and depressor or hold-down in either direction has taken place, the clutch-shifter or controller 121 is arranged to be controlled by the traveler nut 116. In this instance, a rod 129 is pivoted at one end to the traveler nut 116, and extends through a hole in an arm of the clutch-shifter or controller. The rod is free to slide through the said hole in moving with the nut, until a collar 130 or 131 upon the rod brings up against the said arm so that the further movement of the rod actuates the shifter or controller. The collar 130 is arranged to engage with the arm of the shifter or controller in the movement of the nut in one direction, and the second collar, 131, is arranged to engage the shifter or controller in the movement of the nut in the other direction. This arrangement makes the machine self-stopping when the proper limit of movement of the plunger rod or depressor and hold-down in either direction has taken place, and effectually safeguards against inadvertent overcontinuance of the pressure of the operator's foot upon the treadle. Even though the operator's foot should remain pressed upon the treadle, holding the latter in one or the other of its extreme positions, the engagement of one of the collars on the rod with the clutch-shifter or controller will automatically unclutch the driving connections from the screw-shaft, so that the endwise movement of the plunger-rod and depressor or hold-down shall be automatically discontinued at the pre-arranged limit. The collars are fastened in place upon rod 129 by clamping screws 132, 132, so that the collars may be adjusted to vary the limits in either direction.

The combination of screw, and toggles actuated by the screw, produces extreme power. If the outgoing movement of the traveler nut 116 which occasions the lifting action of the plunger-rod and depressor or hold-down should be continued too long through inattention or inadvertence of the operator in maintaining the pressure of his foot upon the treadle the machine would be strained or broken. This, and injury such as would result from too long continuance of the depressing action of the lifter rod, are effectively safeguarded against by the provisions for automatically unclutching the driving connections of the screw 117 when

the proper extent of movement of the plunger rod and depressor or hold-down in either direction has taken place.

In order to cause the depressor or hold-down or presser to move out of the way when it is separated from the lasting devices, so as to afford ample clearance for the insertion or removal of a last and shoe thereon; and also leave the operator free to use the necessary tacking or other fastening means, the depressor or hold-down is movably mounted in connection with the plunger-rod, and has combined with it means for causing it to assume a position at the rear as it rises. In the present instance, the yoke or carrier 103 of the depressor or hold-down is connected pivotally at 132^a to the plunger-rod, Figs. 1, 1^b and 2, and has a forwardly projecting finger 133 intended to co-act with a stop-piece 134 attached to the lower guide, 105, for the plunger-rod. The upward movement of the plunger rod carries the said finger of the depressor or hold-down against the said stop-piece, with the result that the depressor or hold-down is swung rearward into the position shown in Fig. 1^b. When the plunger rod is actuated to cause the same to descend, the descent of the plunger rod carries the finger away from the stop-piece, and the depressor or hold-down or presser swings into position to act against the insole of a shoe or the bottom of the last. A spring is employed in practice to assist the return of the hold-down or presser to working position.

It will be perceived that the invention includes a depressor or hold-down which is automatically stopped at either predetermined limit of its movement, and which may be instantly stopped and reversed at any point of its movement in either direction. Extreme watchfulness or care on the part of the operator during the depression of the shoe into the lasting devices is not essential, because the machine itself determines when the depressing function, and consequently the wiping action, has been properly completed.

The described construction of the machine enables the operator to occasion the automatic depression of the depressor or hold-down, and, if he so desires, to instantly arrest the descent thereof and of the shoe engaged thereby as soon as the top surface of the insole has reached the proper position with reference to the lasting devices. While the machine has this capacity, it is preferred to utilize the toggle action to the powerful termination of its stroke, and to utilize the automatic arrest of the descent of the presser. The automatic stopping devices are designed to make sure that the depressing action shall be arrested or stopped when the toggle is on the center. The stopping point of the presser in its descent de-

termines the position of the upper surface of the insole of the shoe.

The resistance increases as the last and shoe pass down within the lasting devices. The actuating mechanism compensates for this in virtue of the fact that the power increases up to the limit of the strength of the metal of which the parts of the machine are composed. This is attained without in any way affecting the delicacy of the operator's control over the actuation. In an ordinary machine the increasing resistance causes the machine to strain and labor. The operator is enabled at will to close the friction-clutch members of the said actuating mechanism together with moderate pressure so as to permit slipping to occur in case of undue resistance, or he may force them together so that slipping will be absolutely impossible. In this manner the driving of the machine is subject to special control. I secure the combination of unlimited actuating power for the depressor or hold-down, and optional application of that power enabling me to graduate the amount of power to what the leather will stand. I am enabled to approach infinity at either limit. In case the leather of the upper is weak, delicacy of action can be secured by the operator; if it is otherwise, he can apply the power proportionately. By the simple control of the treadle the operator can squeeze a leather of no greater strength than a piece of paper without tearing it, or he could bite off a piece of sole leather. If the operator is aware of a weak place in the upper which he is operating upon, he can humor it by softening the action until such place has passed down below the lasting devices, and then he can apply greater power to suit the greater strength of the succeeding portion of the upper.

Reference has been made to the fact that the heel-post and toe-rest are carried by supports on slides which are adjustable by hand-screws toward and from each other in guides on a bed or platen, 5. The said bed or platen is sleeved upon a cylindrical upright portion 335 of the machine frame and adjustable vertically, this vertical adjustment enabling the lasting devices to be shifted vertically with relation to the lower limit of the movement of the depressor or hold-down. This vertical adjustment is effected by means of a hand-operated adjusting screw 136, and serves to shift the bed or platen vertically upon the main supporting standard. The bed or platen is made fast in its position of adjustment by means of a clamp operated by a handle 137, Fig. 2. The vertical adjustment of the bed or platen renders it possible to adjust the heel and toe lasting devices upon the bed to suit the spring of the last, or otherwise, and then, by vertical shift of the bed and parts car-

ried thereby, adjust the limit of approach without touching the adjusting devices of either the heel or the toe lasting devices. Thereby, for instance, compensation may be made for a uniform increase or decrease in the thickness of the upper leather all around the shoe, or other difference that is uniform all around the shoe.

The approach of the lasted shoe and the lasting devices serves to actuate the lasting devices to wipe the upper about the last, in the sense that as the last and the upper outside of it are entered within the nest of lasting devices, such entrance causes the lasting devices to conform to the contour of the last, and forces such devices outward as the larger portion of the last presents itself. The upper, being between the last and the lasting devices, is thereby wiped in position upon the last. The equalizing device in connection with the forepart lasters operates to bring the last and shoe to central or mid-position. Thereby the pressure and consequent frictional engagement of the lasting devices with the opposite side-portion of the upper are rendered equal, and tendency to pull the upper to one side out of place is obviated.

In sequence, the chain-wiper acts first yieldingly to wipe the upper around the toe-portion of the last, this action being succeeded by that of the vamp-band 68, which is more positive in its action, and that being succeeded by the final positive crimping and crushing action of the toe-wiper chain.

The purpose of the adjustment in connection with the hand-levers 47 and 66 is to enable the operator to get a sufficient extent of inward movement of the crimping devices to give the required pressure. If when the toggle in connection with either of the said hand-levers has straightened the pressure is not sufficient, the corresponding lasting devices are backed off, and by turning the handle portion of the lever the upper arm of the lever is lengthened, the lever being then operated as before. If there is too much pressure, the reverse adjustment will be effected. The parts should be so set and the hand-lever so adjusted that in arriving at full pressure the toggle-joint will straighten. The toggles in connection with the hand-levers enable great power to be secured in operating the crimping devices.

As described, the toe wiper chain is mounted upon a support which is both spring-cushioned and positively actuated. The spring 58 by yielding prevents injury to the upper. The hand-lever toggle-arrangement is so powerful that the operator would be unable to feel any undue pressure between the last and the chain, and in consequence if the action were entirely positive the continued descent of the last might operate to break or cut the upper. The spring

by yielding allows the wiping and crimping chain and its carrier to give so as to avoid injury to the upper, and its movement, being observable by the operator, serves as an indication to him that the chain has been set too far back, enabling him to back off sufficiently to obviate injury to the upper. In the final operation in toe-lasting, upward strain is exerted against the wiper-chain, which strain is sustained by the cover-plate. This strain is experienced in lasting for a welt shoe or a McKay shoe; that is to say, in a shoe having the upper wiped over the edge of the last and insole. In the case of a stitch-down shoe the final strain would be downward.

The waist lasters wipe the upper upward until it is pressed against the upturned flange of the insole. Then the said devices yield and are carried down by the pressure. In practice, in lasting a stitch-down shoe the flange or skirt of the upper is turned downward over the upper ends of the waist lasters, so that the said upper ends serve to support the flanges of the upper and insole and the sole laid thereon, thereby enabling the sole to be secured in place by cementing.

In the preliminary wiping operation, the heel-band performs in connection with the heel-portion of the upper an upward wiping action similar to that performed by the vamp-band 68 in connection with the forepart of the upper.

I claim as my invention,

1. A lasting machine having, in combination, a presser or hold-down for a last having an upper of a shoe applied thereto, lasting devices actuated to draw the upper into place around the last by the coming together or relative approach of the last and upper and the lasting devices, and means for actuating said devices at will independently of the said coming together or relative approach to effect the final operations at the bottom of the last.

2. A lasting machine having, in combination, a presser or hold-down for a last having an upper of a shoe applied thereto, lasting devices actuated to draw the upper into place around the last by the coming together or relative approach of the last and upper and the lasting devices, said devices comprising heel and toe wipers, and means for manually actuating said devices independently of the said coming together or relative approach to effect the final wiping and crimping of the upper at heel and toe.

3. A lasting machine having, in combination, a presser or hold-down for a last having an upper of a shoe applied thereto, lasting devices actuated to draw the upper into place about the last by the entry of the last and upper within the lasting devices, and power means for causing such approach, adapted to be rendered operative, and inop-

erative, and reversed, at the will of the operator, enabling him to occasion the approach or promptly arrest it, or back off.

4. A lasting machine having, in combination, lasting devices actuated to draw an upper about a last by the entry of a last having such upper applied thereto within the lasting devices, and slow-speed power means for causing such coming together, adapted to be rendered operative and inoperative, and to be reversed, all at the will of the operator, enabling him to occasion the coming together or promptly arrest it, and back off.

5. A lasting machine having, in combination, lasting devices, a screw and nut, actuating means in connection therewith, under the control of the operator, and means operatively combined with the said screw and nut through which to occasion the entry of a last with upper thereon within the said lasting devices.

6. A lasting machine having, in combination, lasting devices, a screw and nut, actuating means in connection therewith, under the control of the operator, including a reversible drive mechanism, to occasion the entry of a last with upper thereon within the said lasting devices, arrest such coming together, and back off, at will.

7. A lasting machine having, in combination, lasting devices, a screw and nut, actuating means and connections, including unshipping and reversing devices, whereby under control of the operator to occasion the entry of a last with upper thereon within the said lasting devices, arrest such coming together, and back off, all at will.

8. A lasting machine having, in combination, lasting devices, a screw and nut, means operated thereby to occasion the coming together of a last with upper thereon and the said lasting devices, and a reversible drive with shipper whereby said screw and nut may be rendered operative to occasion the entry of a last with upper thereon within the said lasting devices, arrest such coming together, and back off, all at will.

9. A lasting machine having, in combination, lasting devices, a screw and nut, means operated thereby to occasion the entry of a last with upper thereon within the said lasting devices, and a reversible drive comprising wheels by which movement of rotation in opposite directions is communicated, and controlling means for rendering at will either of said wheels operative to actuate said screw and nut or both of them inoperative.

10. A lasting machine having, in combination, lasting devices, a screw, means operated by said screw to occasion the entry of a last with upper thereon within the said lasting devices, and a reversible drive for said screw comprising wheels which rotate in opposite

directions, and controlling means for rendering at will either of said wheels operative to actuate said screw, or both of them inoperative to actuate it.

11. A lasting means having, in combination, lasting devices, power-means for causing entry of a last with upper thereon within the said lasting devices, adapted to be rendered operative and inoperative at the will of the operator, enabling him to occasion the approach or promptly arrest it, and automatic means for arresting the application of power when the predetermined extent of movement has occurred.

12. A lasting machine having, in combination, lasting devices, power-means for causing entry of a last with upper thereon within the said lasting devices, adapted to be rendered operative and inoperative, and reversed, at the will of the operator, enabling him to occasion the approach, arrest, and back off, at will, and means for automatically arresting the application of power when the predetermined extent of movement in either direction has occurred.

13. A lasting machine having, in combination, lasting devices, slow-speed power-means for causing entry of a last with upper thereon within the said lasting devices, adapted to be rendered operative and inoperative, and to be reversed, all at the will of the operator, and means for automatically arresting the application of power when the predetermined extent of movement in either direction has occurred.

14. A lasting machine having, in combination, lasting devices, a screw and nut, means operatively combined with the said screw and nut through which to occasion the entry of a last with upper thereon within the said lasting devices, reversible power-driving means whereby at the will of the operator the said screw and nut may be actuated to occasion the coming together of a last with upper thereon and the said lasting devices, and reversely actuated for backing off, and means for automatically arresting the actuation of the said screw and nut when the predetermined extent of movement in either direction has occurred.

15. A lasting machine having, in combination, lasting devices, a screw and nut, means operatively combined with the said screw and nut through which to occasion the entry of a last with upper thereon within the said lasting devices, and the backing-off, a reversible drive whereby at the will of the operator the said screw and nut may be operated to cause said entry and the backing-off, and means for automatically disconnecting the driving-power when the predetermined extent of movement in either direction has occurred.

16. A lasting machine having, in combination, lasting devices, a screw and nut, means

operated thereby to occasion the entry of a last with upper thereon within the said lasting devices, and the backing-off, a reversible drive for said screw and nut comprising wheels by which movement of rotation in opposite directions is communicated, and controlling means for rendering at will either of said wheels operative to actuate said screw and nut, and means for automatically disconnecting the said wheels from the screw and nut when the predetermined extent of movement in either direction has occurred.

17. A lasting machine having, in combination, lasting devices, a toggle, actuating means in connection therewith under the control of the operator at all stages in the coming together of the last and lasting devices, and means operatively combined with the said toggle through which to occasion the coming together of a last with upper thereon and the said lasting devices.

18. A lasting machine having, in combination lasting devices, a toggle, and power-driven actuating means in connection therewith under the control of the operator, including reversing mechanism, to occasion the coming together of a last with upper thereon and the said lasting devices, arrest such coming together, and back-off, all at will.

19. A lasting machine having, in combination, lasting devices, a toggle, and toggle-actuating means comprising shipping and reversing devices whereby the operator is enabled at will to occasion the coming together of a last with upper thereon and the said lasting devices, arrest such coming together, and back-off.

20. A lasting machine having, in combination, lasting devices, a toggle, and toggle-actuating means including a reversible drive comprising wheels by which movement in opposite directions is communicated to actuate the toggle reversely, and controlling means for rendering at will either of said wheels operative to actuate said toggle to either cause the coming together of a last with upper thereon and the said lasting devices, or the backing-off, or render both of said wheels inoperative and thereby leave the toggle at rest.

21. A lasting machine having in combination, lasting devices, a toggle, and toggle-actuating means including a reversible drive comprising wheels rotating in opposite directions to actuate said toggle reversely, and controlling means for rendering at will either of said wheels operative to actuate said toggle, to either cause the coming together of a last with upper thereon and the said lasting devices, or the backing-off, or render both of the said wheels inoperative to thereby leave the toggle at rest.

22. A lasting machine having in combina-

tion, lasting devices, a toggle, power-means for actuating said toggle to cause relative approach of a last with upper thereon and the said lasting devices, adapted to be rendered operative and inoperative at the will of the operator, enabling him to occasion the approach or arrest it, and means for automatically arresting the application of power to said toggle when the predetermined extent of movement has occurred.

23. A lasting machine having, in combination, lasting devices, a toggle, and power-means for actuating said toggle to cause relative approach of a last with upper thereon and the said lasting devices, adapted to be rendered operative and inoperative, at the will of the operator, enabling him to occasion the approach and arrest it, at will.

24. A lasting machine having, in combination, lasting devices, a toggle, and power-means for actuating said toggle to cause relative approach of a last with upper thereon and the said lasting devices, adapted to be rendered operative and inoperative, and reversed, at the will of the operator, enabling him to occasion the approach or arrest it, and back-off, at will.

25. A lasting machine having, in combination, lasting devices, a toggle, power-means for actuating said toggle to cause entry of a last with upper thereon within the said lasting devices, adapted to be rendered operative and inoperative, and reversed, at the will of the operator, enabling him to occasion the approach, arrest it, and back-off, at will, and means for automatically arresting the application of power to the toggle when the predetermined extent of movement in either direction has occurred.

26. A lasting machine having, in combination, lasting devices, a toggle, slow-speed power-means for actuating said toggle to cause entry of a last with upper thereon within the said lasting devices, adapted to be rendered operative and inoperative and to be reversed, all at the will of the operator, and means for automatically arresting the application of power to the toggle when the predetermined extent of movement in either direction has occurred.

27. A lasting machine having, in combination, lasting devices, a toggle, means operatively combined with the said toggle through which to occasion the entry of a last with upper thereon within the said lasting devices, reversible power-driving means whereby at the will of the operator the said toggle may be actuated to occasion the entry of a last with upper thereon and the said lasting devices, or reversely actuated for backing-off, and means for automatically arresting the actuation of the said toggle when the predetermined extent of movement in either direction has occurred.

28. A lasting machine having, in combi-

nation, lasting devices, a toggle, means operatively combined with said toggle through which to occasion the entry of a last with upper thereon within the said lasting devices, and the backing-off, a reversible drive whereby at the will of the operator the said toggle may be operated to cause said entry or the backing-off, and means for automatically disconnecting the driving-power when the predetermined extent of movement in either direction has occurred.

29. A lasting machine having, in combination, lasting devices, a toggle, means operatively combined with said toggle through which to occasion the entry of a last with upper thereon within the said lasting devices, and the backing-off, a reversible drive for actuating said toggle comprising wheels by which movement of rotation in opposite directions is communicated, and controlling means rendering at will either of said wheels operative to actuate said toggle, and means for automatically disconnecting the said wheels from the toggle when the predetermined extent of movement in either direction has occurred.

30. A lasting machine having, in combination, lasting devices, a toggle, a screw-actuator for said toggle, power-means for actuating said screw-actuator and thereby actuating the toggle to cause entry of a last with upper thereon within the said lasting devices, adapted to be rendered operative and inoperative at the will of the operator, enabling him to occasion the approach and arrest it, at will.

31. A lasting machine, in combination, lasting devices, a toggle, a screw-actuator for said toggle, power-means for actuating said screw-actuator and thereby actuating the toggle to cause relative approach of a last with upper thereon and the said lasting devices, adapted to be rendered operative and inoperative, and reversed, at the will of the operator, enabling him to occasion the approach, arrest it, and back off, at will.

32. A lasting machine having, in combination, lasting devices, a toggle, a screw-actuator for said toggle, and actuating means for said screw-actuator under control of the operator, including a reversible drive mechanism, to occasion the coming-together of a last with upper thereon and the said lasting devices, arrest such coming together, and back-off, all at will.

33. A lasting machine having, in combination, lasting devices, a toggle, a screw-actuator for said toggle, and actuating means for said screw-actuator comprising shipping and reversing devices whereby the operator is enabled at will to occasion the coming-together of a last with upper thereon and the said lasting devices, arrest such coming-together, and back-off.

34. A lasting machine having, in combina-

tion, lasting devices, a toggle, a screw-actuator for said toggle, and actuating means for said screw-actuator including a reversible drive comprising wheels by which movement in opposite directions is communicated to actuate the toggle reversely, and controlling means for rendering at will either of said wheels operative to actuate said toggle, to either cause the coming together of a last with upper thereon and the said lasting devices, or the backing-off, or render both of said wheels inoperative and thereby leave the toggle at rest.

35. A lasting machine having, in combination, lasting devices, a toggle, a screw-actuator for said toggle, and actuating means for said screw-actuator including a reversible drive comprising wheels rotating in opposite directions to actuate said screw-actuator reversely, and controlling means for rendering at will either of said wheels operative to actuate said toggle, to either cause the coming together of a last with upper thereon and the said lasting devices, or the backing-off, or render both of the said wheels inoperative to thereby leave the toggle at rest.

36. A lasting machine having, in combination, lasting devices, a toggle, a screw-actuator for said toggle, power-means for actuating said screw-actuator to cause relative approach of a last with upper thereon and the said lasting devices, adapted to be rendered operative and inoperative at the will of the operator, enabling him to occasion the approach or arrest it, and means for automatically arresting the application of power to said toggle when the predetermined extent of movement has occurred.

37. In a lasting machine, in combination, a hold-down or presser, actuating means therefor adapted to enable said hold-down or presser to be instantly stopped and reversed at any point in its movement in either direction, and means for automatically stopping the said hold-down or presser at either predetermined limit of its movement.

38. In a lasting machine, in combination, a hold-down or presser, a plunger-rod with which the said hold-down is connected, a double toggle-mechanism connecting with said plunger-rod at opposite sides of the axis of the latter, and power-driven actuating means for the toggles under the control of the operator.

39. In a lasting machine, in combination, a hold-down or presser, a plunger-rod with which the same is connected, a double toggle-mechanism connecting with said plunger-rod at opposite sides of the axis of the latter, a traveler-nut and connections from the respective sides of the same to the respective toggles, and an actuating screw for said traveler-nut.

40. In a lasting machine, in combination, a hold-down or presser, an actuating toggle in connection therewith, a traveler-nut in connection with said toggle, an actuating screw for said traveler-nut, and a reversible drive-mechanism for said screw.

41. In a lasting machine, in combination, a hold-down or presser, an actuating toggle in connection therewith, a traveler-nut in connection with said toggle, an actuating screw for said traveler-nut, wheels which respectively rotate in opposite directions relative to each other, and means for operatively connecting the respective wheels with the actuating screw to rotate the latter in either direction at will.

42. In a lasting machine, in combination, a hold-down or presser, an actuating toggle in connection therewith, a traveler-nut in connection with said toggle, an actuating screw for said traveler-nut, wheels which respectively rotate in opposite directions relative to each other, and means for clutching the respective wheels with the said actuating screw at will.

43. In a lasting machine, in combination, a hold-down or presser, an actuating toggle in connection therewith, a traveler-nut in connection with said toggle, an actuating screw for said traveler-nut, a reverse-drive mechanism for said screw, and means for automatically disconnecting the driving power from the screw at the predetermined limit of movement of the parts in either direction.

44. In a lasting machine, in combination, a hold-down or presser, an actuating toggle in connection therewith, a traveler-nut in connection with said toggle, an actuating screw for said traveler-nut, a reverse-drive mechanism for said screw, and means operated by the traveler-nut to automatically disconnect the driving power from the screw at the predetermined limit of movement in either direction.

45. In a lasting machine, in combination, a hold-down or presser for a last, and a reversible-drive mechanism for actuating the same, including a friction-clutch adapted to be varied in its driving efficiency.

46. In a lasting machine, in combination, a hold-down or presser, an actuating screw in operative connection therewith, and actuating means for the said screw including friction-clutch devices adapted to be varied in driving efficiency to vary the force transmitted through the screw and connections to the hold-down or presser.

47. In a lasting machine, in combination, a hold-down or presser, an actuating toggle-mechanism therefor, an actuating screw in operative connection with said toggle-mechanism, and actuating means for the said screw including friction-clutch devices adapted to be varied in driving efficiency,

to vary the force transmitted through the screw and connections to the hold-down or presser.

48. In a lasting machine, in combination, a hold-down or presser, an actuating toggle-mechanism therefor, an actuating screw in operative connection with said toggle-mechanism, wheels which respectively are rotated in opposite directions relative to each other, and friction-clutch devices for placing the respective wheels in driving connection with the said screw.

49. A lasting machine having, in combination, a last-support normally held yieldingly in outstanding position relative to the lasting devices, and lasting devices self-conforming to rights and lefts interchangeably and actuated by relative approach between the last-support and the lasting devices.

50. A lasting machine having, in combination, heel and toe lasting devices and a hold-down or presser relatively movable toward and from each other, and a support for said lasting devices collectively having an adjustment to adjust the plane of lasting action.

51. A lasting machine having, in combination, a presser, a last-support, heel and toe lasting devices, and means to adjust the lasting devices collectively bodily toward and from the presser.

52. A lasting machine having, in combination, a presser, a last-support, heel and toe lasting-devices for wiping the upper around a sole upon a last, and means to adjust the lasting devices collectively bodily toward and from the presser to adjust the plane of action of the lasting devices.

53. A lasting machine having, in combination, heel and toe lasting devices, a hold-down or presser, means for causing relative approach of said hold-down or presser and the lasting devices, means to adjust the lasting devices collectively toward and from the hold-down or presser to adjust the plane of action of the lasting devices, and means for bodily adjusting the heel lasting devices independently of the toe lasting devices in the line of the said approach.

54. A lasting machine having, in combination, heel and toe lasting devices, a hold-down or presser, means for causing relative approach of said hold-down or presser and the lasting devices, means to adjust the lasting devices collectively toward and from the hold-down or presser to adjust the plane of action of the lasting devices, and means for bodily adjusting the toe lasting devices independently of the heel lasting devices in the line of the said approach.

55. A lasting machine having, in combination, heel and toe lasting devices, means for supporting a last with upper thereon in position to be operated upon by the said devices, means to adjust the lasting devices

collectively toward and from the hold-down or presser to adjust the plane of action of the lasting devices, and means for bodily adjusting the heel lasting devices vertically with relation to the bottom of the last independently of the toe lasting devices.

56. A lasting machine having, in combination, heel and toe lasting devices, means for supporting a last with upper thereon in position to be operated upon by the said devices, means to adjust the lasting devices collectively toward and from the hold-down or presser to adjust the plane of action of the lasting devices, and means for bodily adjusting the toe lasting devices vertically with relation to the bottom of the last independently of the heel lasting devices.

57. A lasting machine having, in combination, a heel-pin, a support therefor, heel lasting devices having a supporting sleeve mounted on said support and adapted to swing transversely concentrically with the heel-pin.

58. A lasting machine having, in combination, a support, heel lasting devices having a supporting sleeve mounted on said support, and a collar in threaded engagement with said support whereby by adjusting said collar the heel lasting devices are adjusted bodily vertically.

59. A lasting machine having, in combination, a heel-pin, a support therefor, heel lasting devices having a supporting sleeve mounted on said support and adapted to swing transversely concentrically with the heel-pin, to conform to the swing of the last, and a collar vertically adjustable on said support whereby the heel lasting devices are adjusted bodily vertically.

60. A lasting machine having, in combination, a heel-pin, a support therefor, heel lasting devices having a supporting sleeve mounted on said support, and a collar in threaded engagement with said support whereby by adjusting said collar the heel lasting devices are adjusted bodily vertically.

61. A lasting machine having, in combination, last-supporting means comprising a toe-rest, a support for said toe-rest, toe lasting devices having a supporting sleeve mounted on said support, and a collar in threaded engagement with said support whereby by adjusting the said collar the toe lasting devices are adjusted bodily vertically.

62. A lasting machine having, in combination, a toe-rest, a support therefor, toe lasting devices having a supporting sleeve mounted on said support and adapted to swing transversely concentrically with the toe-rest to conform to the swing of the last, and a collar vertically adjustable on said support whereby the toe lasting devices are adjusted bodily vertically.

63. A lasting machine having, in combination, a toe-rest, a support therefor, toe lasting devices having a supporting sleeve mounted on said support, and a collar in threaded engagement with said support whereby by adjusting said collar the toe lasting devices are adjusted bodily vertically.

64. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of the heel of the last, a sleeve upon said post, and heel lasting devices supported by said sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last.

65. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of the heel of the last, a sleeve upon said post, heel lasting devices supported by said sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last, and means for adjusting the said heel lasting devices vertically.

66. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of the heel of the last, a sleeve upon said post, means for adjusting said sleeve vertically upon the post, and heel lasting devices supported by the sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last.

67. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of the heel of the last, a sleeve upon said post, a collar in threaded engagement with said post for adjusting said sleeve vertically upon the post, and heel lasting devices supported by the sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last.

68. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of the toe of the last, a sleeve upon the said post, toe lasting devices supported by said sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last, and means for adjusting the said toe lasting devices vertically.

69. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of the toe of the last, a sleeve upon the said post, means for adjusting said sleeve vertically upon the post, and toe lasting devices supported by the sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last.

70. A lasting machine having, in combination, last-supporting means, a post lo-

cated in line with the center of the curve of the toe of the last, a sleeve upon said post, a collar in threaded engagement with said post for adjusting said sleeve vertically upon the post, and toe lasting devices supported by the sleeve and adapted to swing transversely concentrically with said curve to conform to the swing of the last.

71. A lasting machine having, in combination, last-supporting means, a post adjacent one end of the last, a sleeve upon the said post, a mounting connected to said sleeve with capacity to swing vertically to adjust the inclination of the plane of action of the lasting devices to suit the pitch of the last, and lasting devices carried by said mounting with capacity to rock transversely to suit the twist of the last, and adapted to be swung transversely to conform to the swing of the last.

72. A lasting machine having, in combination, last-supporting means, a post located in line with the center of the curve of one end of the last, a sleeve upon said post, a mounting connected to said sleeve with capacity to swing vertically to adjust the inclination of the plane of action of the lasting devices to suit the pitch of the last, and lasting devices carried by the said mounting with capacity to rock transversely to suit the twist of the last and adapted to be swung transversely to conform to the swing of the last.

73. A lasting machine having, in combination, lasting devices, a carrier therefor, means for actuating the carrier and lasting devices to perform the lasting operation and parallel-motion supporting links on which said carrier swings in being actuated for the lasting operation and retracted.

74. A lasting machine having, in combination, lasting devices, a carrier therefor, a mounting, parallel-motion swinging-link carrier-supporting means in connection with said mounting, actuating means for said carrier and lasting devices, and means providing for adjustment of the carrier and mounting to suit the pitch of the last.

75. A lasting machine having, in combination, lasting devices, a carrier therefor, last-supporting means, a post adjacent one end of the last, a sleeve on said post, provided with a mounting, and adapted to turn about the post, and parallel-motion swinging-link carrier-supporting means in connection with said mounting.

76. A lasting machine having, in combination, lasting devices, a carrier therefor, last-supporting means, a post adjacent one end of the last, a sleeve on said post adapted to turn about the latter, a mounting connected with said sleeve, parallel-motion swinging-link carrier-supporting means in connection with said mounting, and means to adjust the said mounting to cause the

lasting devices to conform to the pitch of the last.

77. A lasting machine having, in combination, lasting devices, a carrier therefor, last-supporting means, a post adjacent one end of the last, a sleeve on said post adapted to turn about the latter, a mounting connected pivotally with said sleeve, parallel-motion swinging-link carrier-supporting means in connection with said mounting, and adjusting means for said mounting to adapt the lasting devices to the pitch of the last.

78. A lasting machine having, in combination, lasting devices, a carrier therefor, and a toggle for actuating said carrier and lasting devices to perform the lasting operation.

79. A lasting machine having, in combination, lasting devices, a carrier therefor, a toggle for actuating said carrier and lasting devices to perform the lasting operation, and means for varying the effective length of the toggle.

80. A lasting machine having, in combination, lasting devices, a carrier therefor, a toggle for actuating the carrier and lasting devices to perform the lasting operation, and means for varying the effective length of one of the toggle-members to thereby vary the effect of the toggle.

81. A lasting machine having, in combination, lasting devices, a carrier therefor, a toggle for actuating the carrier and lasting devices to perform the lasting operation, and a combined toggle-operating handle and adjusting device for varying the effective length of the toggle.

82. A lasting machine having, in combination, lasting devices, a carrier therefor, a toggle for actuating the carrier and lasting devices to perform the lasting operation, the said toggle comprising link-members pivotally connected together, and a hand-lever with which one of said link-members is connected by a screw-connection providing for adjustment of the effective length of the toggle by the turning of the handle-portion of said hand-lever.

83. A lasting machine having, in combination, lasting devices, a carrier therefor mounted to swing, a link operatively connecting with said carrier and forming a toggle-member, a second toggle-member pivotally connecting with the first, a pivotally supported mounting, and a hand-lever combined with said mounting, rotatable, and in screw-threaded engagement with the second toggle-member, whereby by means of the hand-lever the toggle may be operated to actuate the lasting devices, and by rotating the handle the toggle-length may be adjusted.

84. A lasting machine having, in combination, lasting devices, swinging-link parallel-motion supporting means therefor, a toggle

comprising a member operatively connecting with said lasting devices, a second member pivotally engaged with the first, and a pivotally supported mounting, and an operating lever or handle combined with said mounting, and in screw-threaded adjustable connection with the second toggle-member.

85. A lasting machine having, in combination, lasting devices, parallel-links supporting said devices, a toggle comprising a member operatively connecting with said parallel-links, a second member pivotally engaged with the first, and a pivotally supported mounting, and an operating lever or handle combined with said mounting and in adjustable screw-threaded connection with the second toggle-member.

86. A lasting machine having, in combination, last-supporting means, wiper lasting devices, and means for actuating said lasting-devices to wipe the edge of the upper around the edge of the last and during the wiping action press the wipers more closely toward the bottom of the last.

87. A lasting machine having, in combination, last-supporting means, wiper lasting devices, swinging carrying means for said devices constructed to permit the wiping action and cause the wipers to press more closely toward the bottom of the last in the final portion of such action.

88. A lasting machine having, in combination, last-supporting means, wiper lasting devices, and parallel-link supporting means for said devices operating in the final portion of the wiping action to press the wipers more closely toward the bottom of the last.

89. A lasting machine having, in combination, an actuating carrier, a plate movably mounted thereon, arms pivotally connected to said plate, a compressor-band having its opposite end-portions connected to said arms, and a spring cushion between a part of said carrier and a part of said plate through which movement is transmitted from the carrier to the plate and band.

90. A lasting machine having, in combination, an actuating carrier, a compressor-band carrier movably combined therewith, arms pivotally connected to said compressor-band carrier, a compressor-band having its opposite end-portions connected to said arms, a spring cushion between parts of the respective carriers and through which movement is transmitted from the actuating carrier to the compressor-band carrier, wipers, carrying levers therefor connected to travel with the actuating carrier, a spring acting upon said levers to open the wipers, and means carried by the compressor-band carrier acting upon the said levers in the independent movement of the actuating carrier to occasion the closing movement of the wipers.

91. A lasting machine having, in combination,

an actuating carrier having up-standing lugs, a plate movably mounted on said carrier and having openings through which said lugs project, arms pivotally connected to said plate, a compressor-band having its opposite end-portions connected to said arms, a pin carried by said lugs and fitting bearings in said plate, permitting the plate to rock transversely to conform to the twist of the last, the said pin adapted to slide lengthwise in said bearings, a spring cushion through which movement is transmitted from the actuating carrier to the said plate, a second plate mounted upon the compressor-band plate and engaged and actuated by one of the lugs of the actuating carrier, wiper-carrying levers pivoted to said second plate, wipers combined with said levers, a spring acting to open the levers and wipers, and means carried by the compressor-band plate acting upon the levers in the independent movement of the actuating carrier to occasion the closing movement of the wipers.

92. A lasting machine having lasting devices comprising a floating flexible wiper-chain composed of a series of links connected together so as to be capable of play or flexure in the plane of the chain, whereby the chain is enabled to conform itself closely to the contour of the exterior of the last.

93. A lasting machine having, in combination, a transversely floating flexible wiper-chain composed of a series of links jointed together and capable of play or flexure in the plane of the chain, means for moving said wiper-chain into position to partly encircle a last with upper thereon, and means to occasion relative movement between the last and upper and the encircling wiper-chain to wipe the upper upward into place about the last.

94. A lasting machine having, in combination, a transversely floating flexible wiper-chain composed of a series of links jointed together and capable of play or flexure in the plane of the chain, said chain adapted to partly encircle a last with upper thereon, and means for actuating said wiper-chain to wipe the upper around the edge of the last and crimp it over the bottom thereof or a sole thereon.

95. A lasting machine having, in combination, a transversely floating flexible wiper-chain composed of a series of links jointed together and capable of play or flexure in the plane of the chain, said chain adapted to partly encircle a last with upper thereon, means to occasion relative movement between the last and upper and the encircling wiper-chain to wipe the upper upward into place about the last, and means for moving said wiper-chain inward into position to engage with the upper around the contour of the last for the wiping action, and for moving

it farther inward to wipe the upper around the edge of the last and crimp it over the bottom thereof or a sole thereon.

96. A lasting machine having, in combination, a transversely floating flexible wiper-chain composed of a series of links jointed together and capable of play or flexure in the plane of the chain, said chain confined to prevent it from being sprung either downward or upward, means for moving said wiper-chain into position to partly encircle a last with upper thereon, and means to occasion relative movement between the last and upper and the encircling wiper-chain to wipe the upper upward into place about the last.

97. A lasting machine having, in combination, a wiper-carrying plate, opposite arms hung to said plate, and a transversely floating flexible wiper-chain which conforms to the contour of the end-portion of the last, said chain composed of a series of links jointed together and capable of lateral play or flexure in the plane of the chain.

98. A lasting machine, having, in combination, a wiper-carrying plate, a transversely floating flexible wiper-chain composed of a series of links jointed together and capable of play or flexure in the plane of the chain, said chain adapted to partly encircle a last with upper thereon, and means to occasion relative movement between the last and upper and the encircling wiper-chain, at first with yielding action to wipe the upper upward into place about the last, and then with positive action to wipe the upper around the edge of the last and crimp it over the bottom thereof or a sole thereon.

99. A lasting machine having, in combination, a wiper-band which embraces one end and portions of two sides of a last with the upper thereon, means for producing relative movement of said wiper-band and last causing said last to enter the said wiper-band, and means acting during such relative movement to close the wiper-band against the upper and last to engage with the upper to wipe the upper upwardly into place about the last.

100. A lasting machine having, in combination, a wiper-band which embraces one end and portions of two sides of a last with upper thereon, means for producing relative movement of said wiper-band and last causing said last to enter the said wiper-band, and means actuated through such entrance to close the wiper-band against the upper and last to engage with the upper to wipe the upper upward into place about the last.

101. A lasting machine having, in combination, a wiper-band which embraces one end and portions of two sides of a last with upper thereon, means for producing relative

movement of said wiper-band and last causing said last to enter the inclosure of the wiper-band, and a last-support actuating said wiper-band to close against the upper and last so as to engage with the upper to wipe the latter upward into place about the last.

102. A lasting machine having, in combination, a wiper-band, means for producing relative movement of said wiper-band and a last with upper thereon causing said last to enter the inclosure of the wiper-band, and a toe-rest engaged by the last and actuating the wiper-band to close it against the upper and last so as to engage with the upper to wipe the latter upward into place about the last.

103. A lasting machine having, in combination, a wiper-band, swinging arms connected therewith, and means actuated by the entrance of a last with upper thereon into the inclosure of said wiper-band to move the opposite portions of the wiper-band against the upper and last.

104. A lasting machine having, in combination, a wiper-band, swinging arms connected therewith, and a toe-rest operated by the entrance of a last with upper thereon into the inclosure of the wiper-band and acting to move the opposite portions of the wiper-band inward against the upper and last.

105. A lasting machine having, in combination, a wiper-band, swinging arms connected therewith, a member connected with said arms and normally acting to keep the wiper-band expanded, and a toe-rest operated by the entrance of a last with upper thereon into the inclosure of the wiper-band and actuating the said member to in turn actuate said swinging arms to close the wiper-band into wiping engagement with the said upper.

106. A lasting machine having, in combination, a wiper-band, swinging arms connected therewith, a member linked to projections from said arms and spring-actuated to keep the wiper-band normally expanded, and a toe-rest in yielding connection with said member and operated by the entrance of a last with upper thereon into the inclosure of the wiper-band to actuate the said member to in turn actuate the swinging arms to close the wiper-band into wiping engagement with the said upper.

107. A lasting machine having, in combination, a wiper-band which incloses one end and portions of the length of a last, swinging arms connected with said wiper-band and spring-actuated to hold the wiper-band inward toward the last, and means for producing relative approach of a last with upper thereon and said wiper-band to occasion entrance of the last and upper within the

inclosure of the wiper-band and the wiping of the upper upward into place around the last.

108. A lasting machine having, in combination, a wiper-band which incloses one end and portions of the length of a last, and inwardly-inclined swinging posts supporting the wiper-band by their upper portions and spring-actuated to hold the wiper-band contracted inwardly for yielding wiping engagement with the upper upon a last as such last enters the inclosure of the wiper-band.

109. A lasting machine having, in combination, a last-support, a wiper, and a post inclining from its pivot upward and inward toward the last-support and supporting said wiper by its upper end and spring-actuated to hold the wiper normally inward for yielding wiping engagement with the upper upon a last as such last is depressed relative to the wiper.

110. A lasting machine having, in combination, a wiper-band adapted to encircle one end and extend along the sides of a last, crimping wipers, and means for producing relative approach between the last and the wiper-devices and thereby causing the last with upper thereon to enter within the wiper-devices, whereby a preliminary wiping of the upper into place about the last is effected, and means for operating said crimping wipers to wipe over and crimp the portions of upper projecting at the bottom of the last.

111. A lasting machine having, in combination, a wiper-band adapted to encircle one end and extend along the sides of a last, crimping wipers, means for producing relative approach between the last and the wiper-devices and thereby causing the last with upper thereon to enter within the wiper-devices, whereby a preliminary wiping of the upper into place about the last is effected, means for operating said crimping wipers to wipe over and crimp the portions of upper projection at the bottom of the last, and a mounting for said wiper-band and crimping-wipers in common, adjustable to conform to the pitch and the swing of the last.

112. A lasting machine having, in combination, a movable last-support, and waist-wiper devices actuated by said last-support to wipe the waist-portion of the upper into place about the last as the last and upper thereof enter between the said devices.

113. A lasting machine having, in combination, wiper devices constructed to close against a last with upper thereon as it enters between them, and to move in the same direction as the last and upper but at slower speed, thereby wiping the upper into place about the last.

114. A lasting machine having, in combination, a movable last-support, and wiper devices arranged to close against a last and upper as they enter between them, and actuated from said last-support to move in the same direction as the last and upper but at slower speed, thereby wiping the upper into place about the last.

115. A lasting machine having, in combination, waist-wiper devices constructed to close against a last with upper thereon entered between them, and to move in the same direction as the last and upper at slower speed, thereby wiping the waist of the upper into place about the last.

116. A lasting machine having, in combination, a movable last-support, and waist-wiper devices arranged to close against a last and upper as they enter between them, and actuated from said last-support to move in the same direction as the last and upper at slower speed, thereby wiping the waist of the upper into place about the last.

117. A lasting machine having, in combination, a wiper, a movable last-support, and means for actuating said wiper to move in unison with the last-support, in the same direction, at a slower rate of speed, whereby the wiping action results from the difference in the rates of movement.

118. A lasting machine having, in combination, a movable last-support, a wiper-carrier, and a wiper yieldingly mounted on said wiper-carrier, the said wiper-carrier operated by the moving last-support to move the wiper in the same direction at a slower rate of speed, whereby the wiping action results from the difference in the rates of movement.

119. A lasting machine having, in combination, a movable last-support, a wiper, and a swinging member actuated by said last-support in the movement of the latter and actuating the wiper with reduction in the leverage whereby the wiper is caused to move in the same direction as the last but at less speed.

120. A lasting machine having, in combination, a movable last-support, a swinging wiper-actuating member to which power is communicated from the last-support, and a wiper connected with said member at a point between that of the application of said power and the pivotal axis of the said member.

121. A lasting machine having, in combination, a movable last-support, a swinging wiper-carrier actuated by power communicated from said last-support in the movement of the latter, and a wiper connected with the wiper-carrier between the pivotal axis thereof and the point of application of such power, and thereby caused to move in the same direction as the last-support but at a different rate of speed.

122. A lasting machine having, in combination, a movable last-support, a swinging wiper-carrier actuated by power communicated thereto from said last-support, and
5 a yielding-backed wiper connected with the wiper-carrier between the pivotal axis of the latter and the point of application of such power, and thereby caused to move in the same direction as the last-support but
10 at a different rate of speed.

123. A lasting machine having, in combination, a wiper-support, and a wiper mounted thereon to swivel on a vertical axis and thereby accommodate itself to the longitudinal contour of the last.
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124. A lasting machine having, in combination, a movable last-support, a swinging wiper-carrier actuated by power communicated thereto from said last-support, a yielding-backed wiper-support connected with
20 said wiper-carrier between the pivotal axis of the latter and the point of application of the said power, and a wiper mounted on said wiper-support, with capacity to swivel on a
25 vertical axis and thereby accommodate itself to the shape of the last.

125. A lasting machine having, in combination, a movable last-support, opposite swinging wiper-actuating members actuated by power communicated thereto from said last-support, and wipers connected with the respective members between the pivotal axes of the latter and the points of application of the said power, and thereby caused to move in the same direction as the last but at a different rate of speed.

126. A lasting machine having, in combination, a movable last-support, oppositely pivoted swinging wiper-carriers actuated by power communicated to their inner portions from said last-support, and yielding-backed wipers connected with the respective wiper-carriers between the power-receiving points and the pivotal axes, whereby the wipers are caused to move in the same direction as the last but at less speed.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK W. MERRICK

Witnesses:

CHAS. F. RANDALL,
ELLEN O. SPRING.

-1,368,968.

Patented Feb. 15, 1921.

9 SHEETS—SHEET 1.

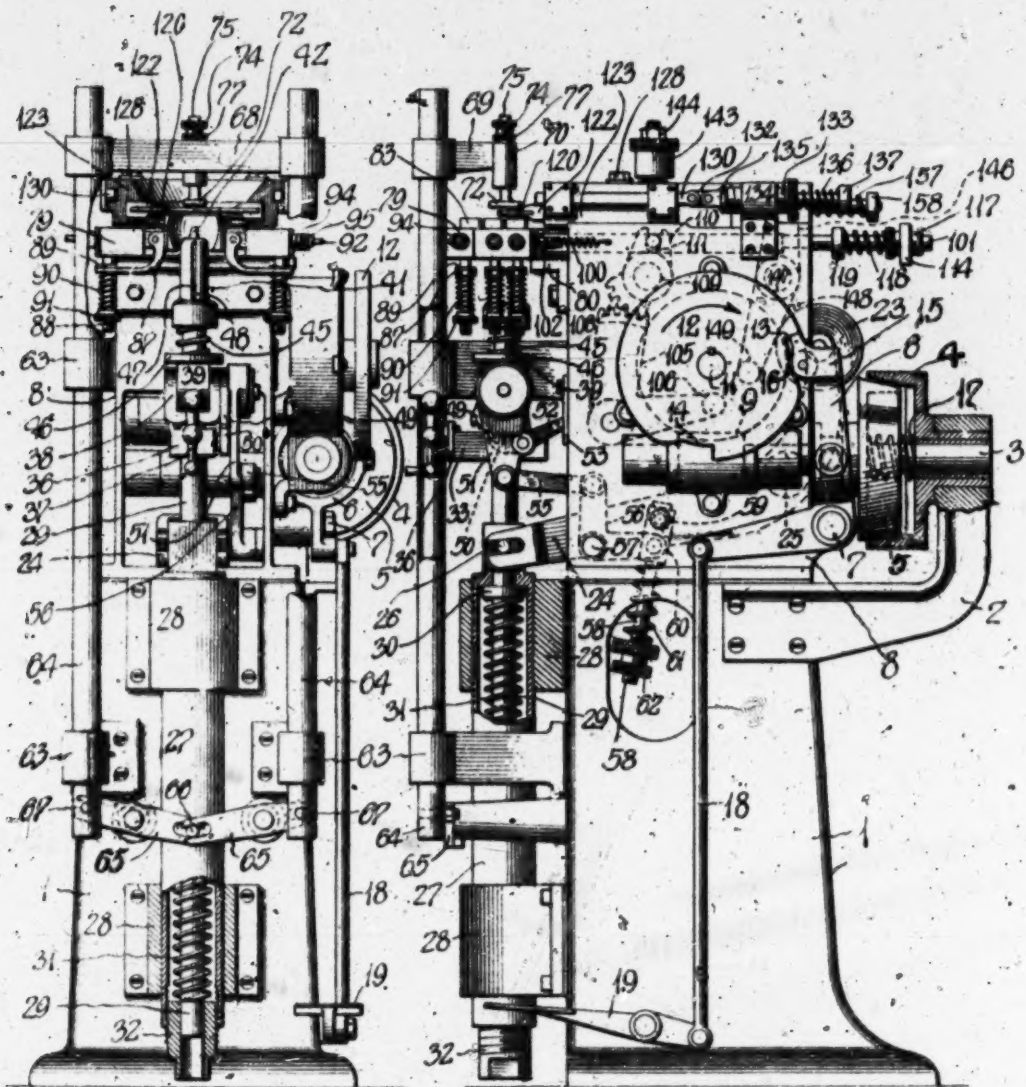


Fig. 1.

Fig. 2.

Witnesses

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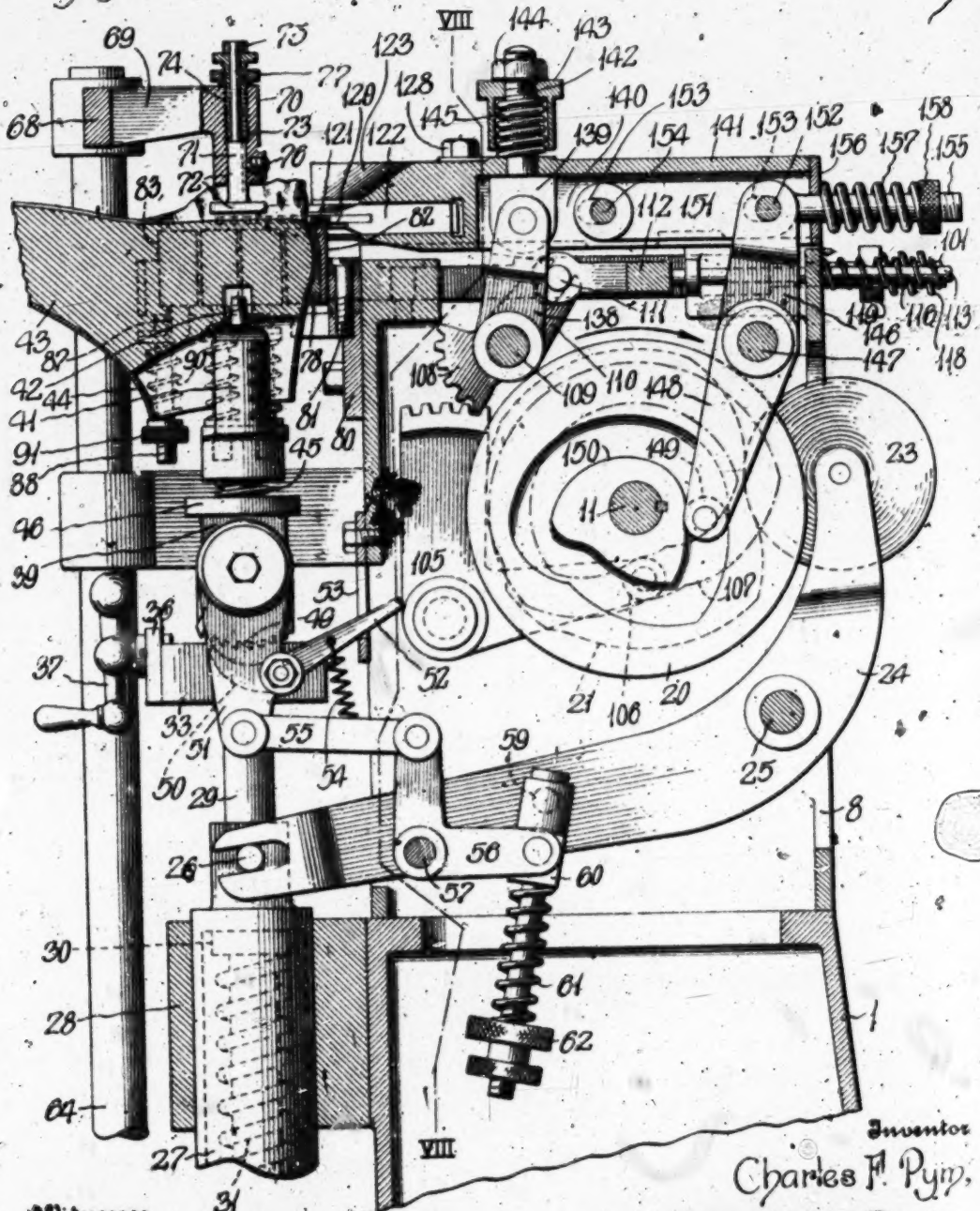
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9 SHEETS—SHEET 2.

Fig. 3.



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9 SHEETS—SHEET 3.

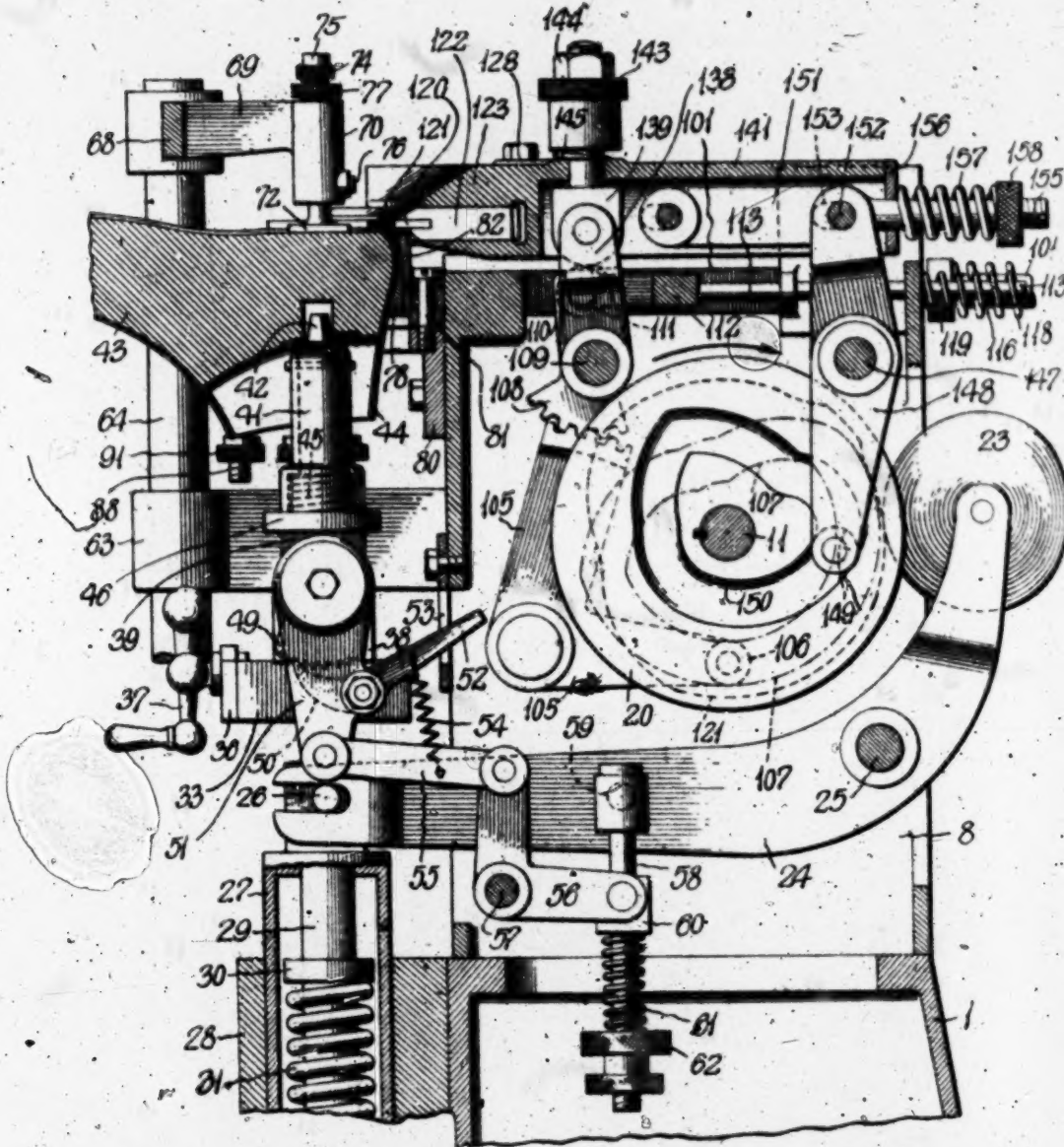


Fig. 4.

Witnesses

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9 SHEETS—SHEET 4.

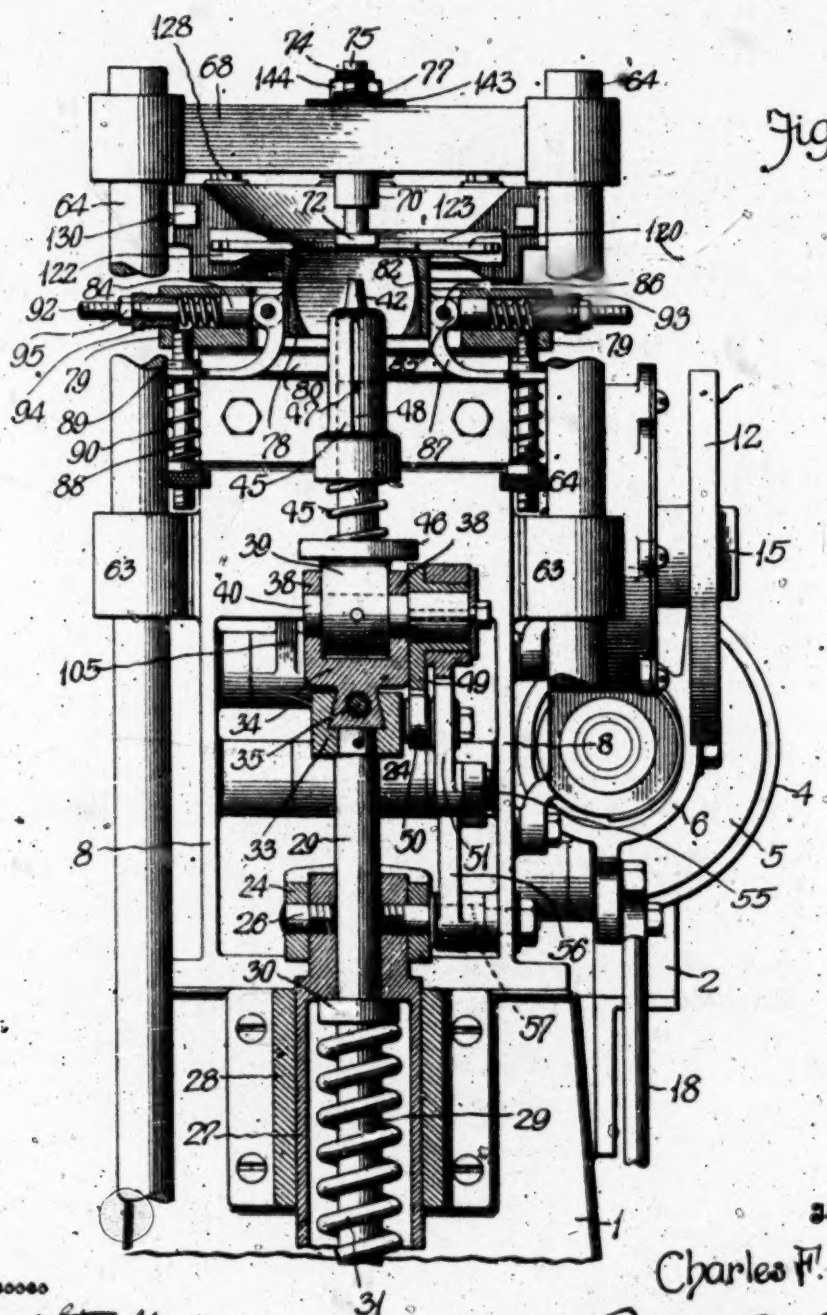


Fig. 5.

Witnesses

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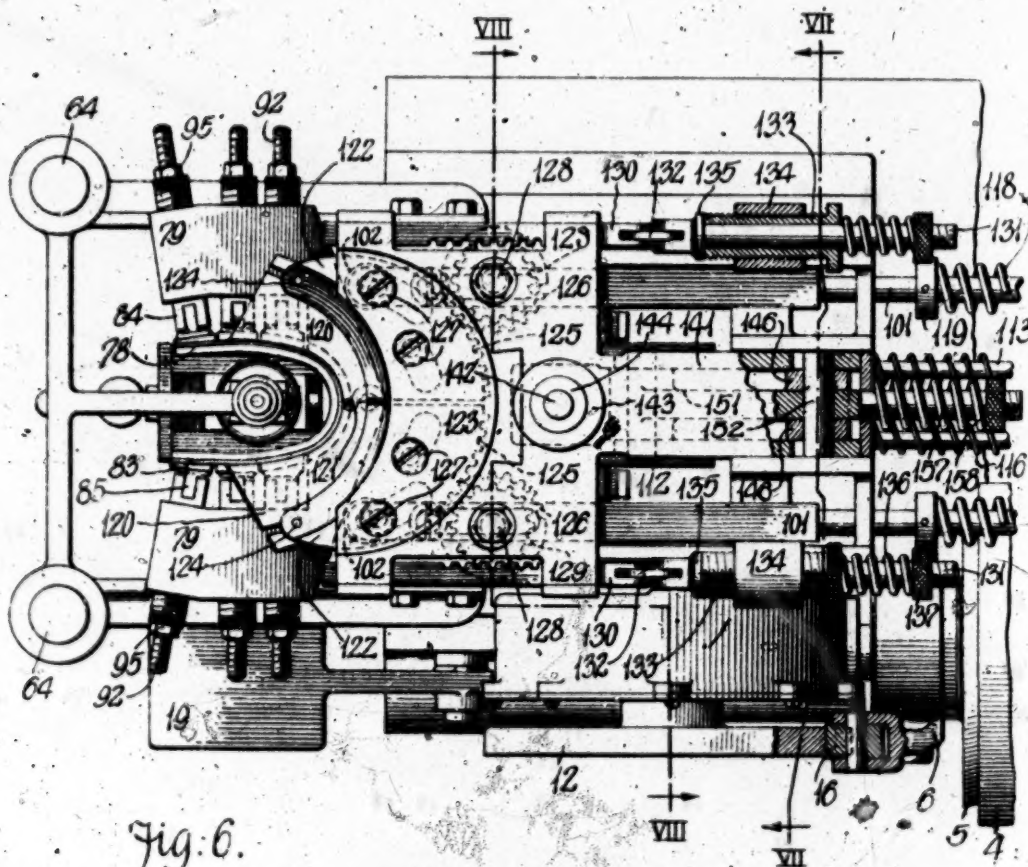


Fig. 6.

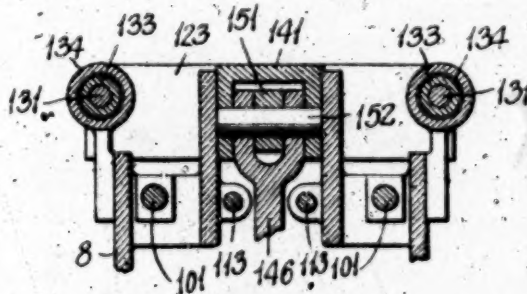


Fig. 7.

Witnesses

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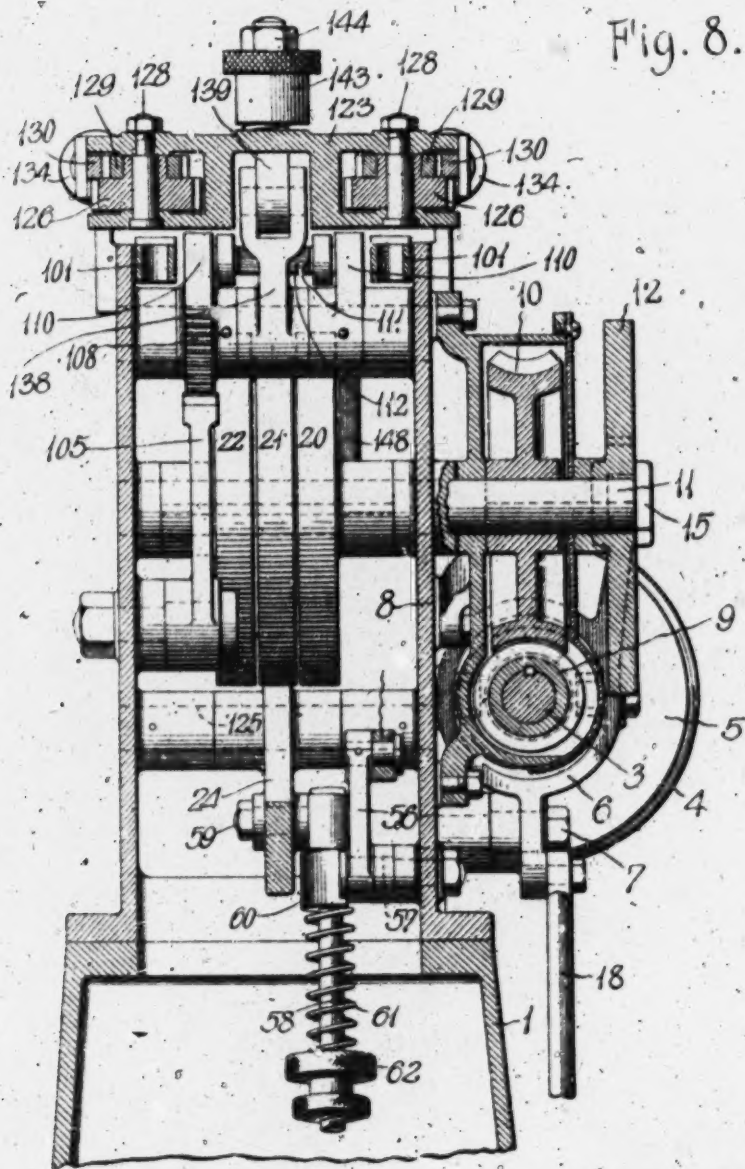


Fig. 8.

Witnesses

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1,368,968.

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9 SHEETS—SHEET 8.

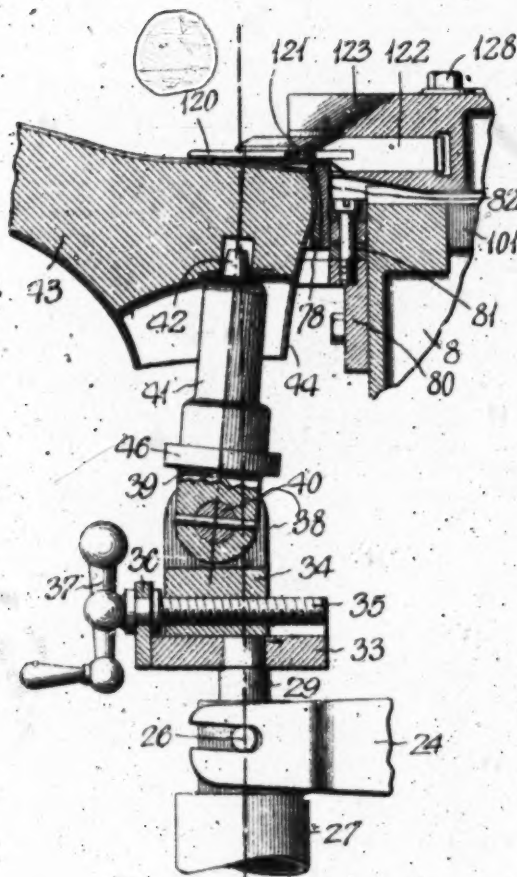


Fig. 12.

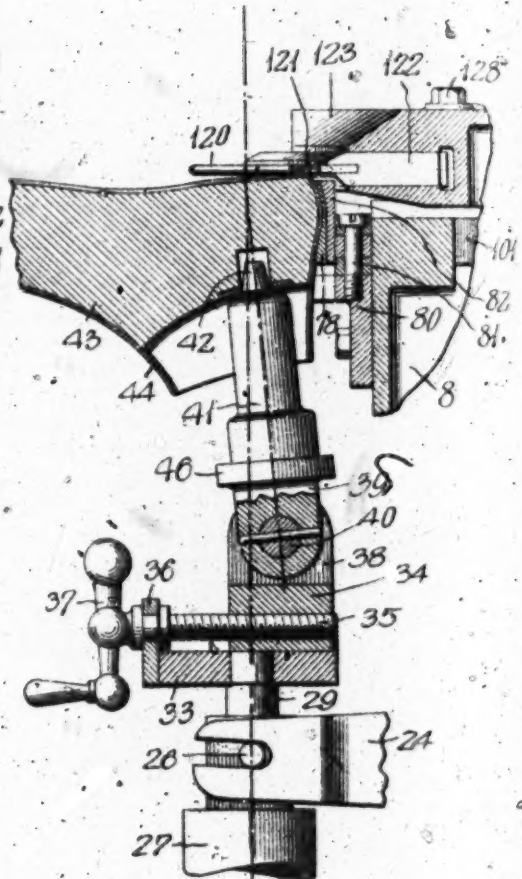


Fig. 13.

Witnesses

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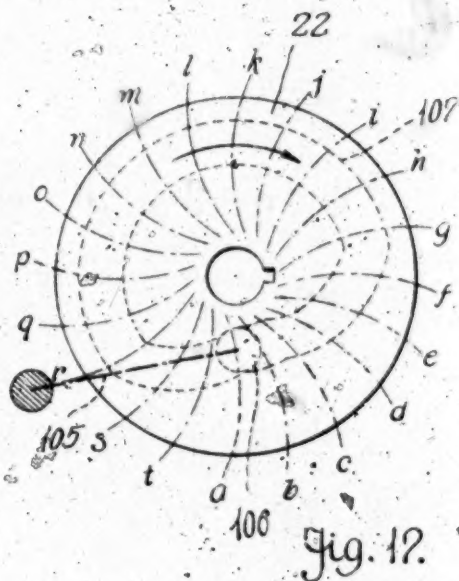
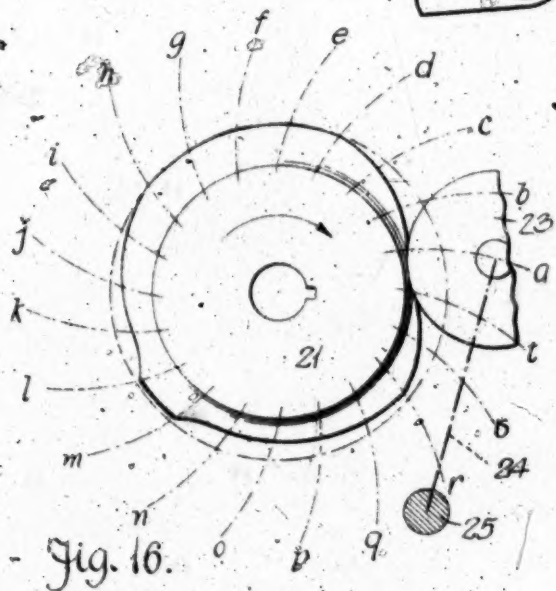
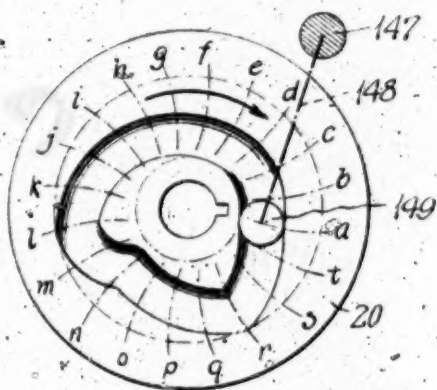
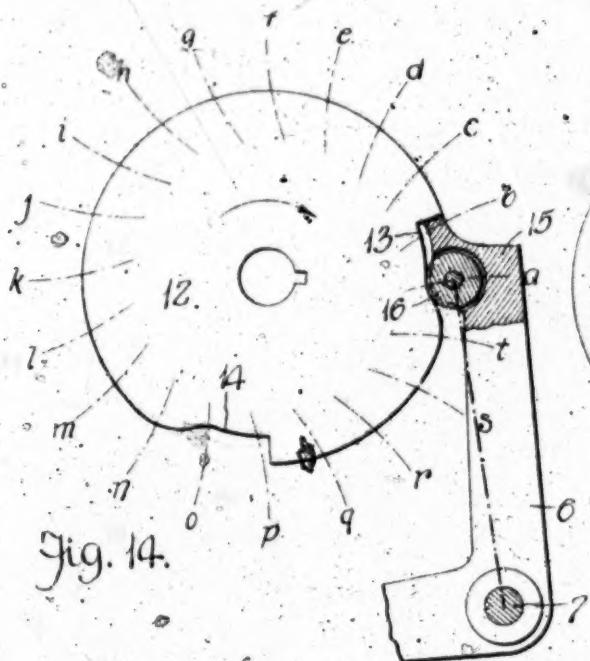
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9 SHEETS—SHEET 9.



Witnesses

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LASTING-MACHINE.

1,368,968.

Specification of Letters Patent.

Patented Feb. 15, 1921.

Application filed December 13, 1915. Serial No. 65,486.

To all whom it may concern:

Be it known that I, CHARLES F. PYM, a subject of the King of England, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Lasting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for shaping the uppers of boots or shoes and more particularly, in some of its aspects, to that type of machine in which means are provided for clamping and conforming the shoe upper materials to the sides of a form, for example, the shoe last, at one end of the last and for wiping the upstanding edge of the clamped upper at that end of the last over the bottom of the last and compacting it over the sole or insole mounted over the last bottom.

The vertical and longitudinal contours of the sides of lasts will vary at their ends with rights and lefts of the same pattern, and with different patterns of lasts. Consequently, if the upper is to be correctly conformed to the contour of the sides of the last, the clamping or conforming means must be capable of adaptation to these varying contours. This variance is particularly noticeable at the opposite sides of the heel end of the last, the inner side face of which is noticeably undercut in contrast to the rounded outer side face.

In one aspect of the invention, a novel feature resides in improved end clamping means, the construction shown comprising a flexible end embracing band for conforming a boot or shoe upper to one end of its last, and means for forcing said band into last-conforming contact with the shoe upper including a series of pressure members acting against each side of the band and arranged independently to yield responsively to pressure against the band and last in directions automatically to adjust themselves to cause the band to press and conform the upper to the longitudinal and vertical contours of the sides of the last, a common carrier for each series of pressure members, and means for moving said carriers in directions to cause said members to press the upper into conformity with the last. Preferably, these pressure members form a substantially continuous surface to engage the flexible mem-

ber at opposite sides of the longitudinal median line of the last and shoe. Further, in order that they may conform to the vertical as well as the lengthwise contour of the last, these pressure members are mounted to rock against yielding resistance about axes extending lengthwise of the last for adjustment transversely of the flexible member. Preferably, the pressure members extend across substantially the full width of the illustrated flexible member. The independent bodily movement of the pressure members in directions toward and from the last permits automatic conformation of the members to the lengthwise contour of the sides of the last while the pivotal mounting of these members permits them automatically to conform to the vertical contour of the last sides so that when pressure is applied to the pressure members the flexible member closely conforms the shoe upper to the sides of the last. In some of its aspects, moreover, the invention presents novelty in the clamping means irrespective of the use of a flexible end-embracing member.

In conforming the shoe upper to the last, it is difficult to obliterate through closing pressure, only, of the end embracing means, the wrinkles and inequalities on the face of the shoe upper at the end of the shoe in and about the longitudinal median line of the shoe. A further feature of this invention consists in novel means effective to achieve this result, the construction shown comprising a last support and an opposed member relatively movable to clamp a last between them, with means operated by said relative movement to force the last and shoe upper lengthwise into upper conforming contact with an end embracing means at the end of the last. Preferably, the contact is yieldingly effected and means are also provided to hold the last and shoe in such conforming contact under yielding pressure. The described combinations provide means which will conform the upper materials with precision to the end face of the last, and will clamp the shoe and last against movement relatively to its support so that the smoothing out or conforming pressure is maintained for a sufficient period to make it effective.

A further novel and advantageous feature of the invention consists in opposed members at the top and bottom of a last, respectively connected for simultaneous move-

ment toward each other to clamp the last between them and also connected for simultaneous movement in opposite directions from each other. The connection of these 5 opposed members for simultaneous movement requires but one actuating mechanism and greatly simplifies the timing operation in an automatic lasting mechanism. Further advantage is secured by providing one of 10 these opposed members with a yielding element. This enables the yielding element to be depressed by the non-yielding member, for example to relieve pressure of the yielding element against lasting wipers, and enables reverse movement of the non-yielding 15 member to permit the pressure of the yielding element to operate against lasting means engaged with the marginal portion of a shoe upper over the bottom of the last. Advantageously also, a portion of one of the opposed members, for example, the last supporting member, is pivoted to permit the previously described longitudinal movement of the last in the direction of embracing 25 and conforming means for the upper at the end of the last.

Another important portion of this invention deals with the efficient conformation of the marginal portion of the upper to the 30 edge and the bottom face of the form or last, or of the insole thereon. The margin of the upper, which is presented as an upstanding flange around the end of the shoe, is to be gathered inwardly and compacted 35 to form a seat upon which to lay the outsole and should be molded at the extreme edge of the shoe bottom to present a well defined and permanent edge line and, after the outsole is attached, one wall of a clear straight rand 40 or welt crease. This edge formation has been most difficult to obtain and render permanent, as may be appreciated when it is remembered that the gathering of the flange over the heel seat end of the insole, for 45 example, produces fullness in the form of plaits that increase the effective thickness of the upper stock under the wipers as the wipers advance inwardly over the shoe bottom. It has been necessary, in order to prevent the wipers from shearing off the upper 50 as they advance, to adjust wipers and last supports relatively in such planes that relatively light and ineffective pressure was produced on the low surface at the edge of the heel seat and effective pressure was applied only on the portion of the overwiped flange remote from the edge. I have dealt with this condition in two ways each of which is broadly new in the art as I am advised. 60 One of these important features of this invention comprises novel means for positioning and effecting relative movement of end lasting wipers and a shoe to cause the wipers to wipe the upper smoothly and firmly 65 across the edge of the shoe bottom prior to

their wiping action over the shoe bottom. This feature in the construction shown being embodied in what may be termed "climbing" wipers, which engage the lateral periphery of the shoe with the plane of their wiping faces slightly displaced from the plane of the work at the edge of the shoe bottom and are forced by wedging action of the shoe to climb or ride over the edge of the embraced shoe end in hard frictional contact with the upper and against the resistance of a stiff spring or its equivalent. The organization contemplated by me under this invention, and one example of which is herein fully described, provides for applying around the end of a shoe, for the first time so far as I am aware, heavy wiping or ironing down pressure to the upper being overwiped at the extreme edge of the shoe end, and continuing substantially the same pressure as the wipers advance over the thicker upper materials encountered as they move inwardly from the shoe edge. Preferably the extent of possible yield of the wipers upwardly in order to climb over the edge of the shoe is narrowly limited so that the wipers become unyielding against upward displacement during their inwiping movement. It is an important characteristic of a wiper mechanism organized as described that it is possible to make the wipers frictionally pull the upper tightly over the edge of the insole and insure very snug fitting of the upper around the edge of the insole, for example at the heel seat. This feature of climbing wipers is of particular importance in automatic end lasting or end shaping machinery in which an operator's judgment is not largely available and I intend to limit some claims to an automatic shoe shaping machine characterized by this feature of invention.

It is usually desirable, in order to obtain permanence of shaping of the upper materials over the bottom of a last end, to repeat the wiping operation, under some conditions a number of times, to break down and set the overwiped flange in its new position. A feature of this invention consists in the combination with a climbing wiper of mechanism organized to reciprocate the wiper repeatedly without backing it fully off, or across the shoe edge. My experience indicates that the advantageous effect of a climbing wiper, particularly in an automatic machine, is not enhanced by causing it to repeat its action on the shoe edge.

The second way above referred to in which I have dealt with the conditions presented by the increasing thickness of gathered upper materials as the wipers progress over the shoe bottom is automatically to change the pressure as the wipers advance. In accordance with the illustrated embodiment of this feature of the invention the last is

sustained by means including a very stiff spring, and a holddown, by which the plane of the heel seat is determined relatively to the wipers, is operated to hold the shoe depressed to an initial wiping level at which the heavy sustaining spring is compressed and is caused to rise after the wipers have started inwardly over the heel seat, thereby allowing the heavy spring to press the shoe upwardly with its full strength against the advancing wipers. This organization, by which the pressure is changed automatically during the advance of the wiper, produces the most effective compacting and permanent setting of the overwiped upper materials of which I am aware. The effectiveness of wiping is enhanced, as is well known, by relieving the pressure to prevent drag of the wipers during back strokes, and I preferably connect the holddown with automatic means operating in timed relation with the wipers to depress the shoe or last slightly before the wipers start back and to allow the heavy spring to uplift the shoe or last at a definite point in the advance of the wipers. It is, of course, understood that while the climbing wipers and the shoe moving means are advantageously used together they are not limited to such use.

In operating upon different sizes and shapes of lasts and shoes, it is necessary to adjust the last and shoe supporting means relatively to the upper conforming means and to the wipers so as to present the insole to the wipers in the plane to secure the most effective wiping down pressure by the wipers against the edge of the upper and insole. The last holes into which the supporting last spindle extends are not in uniform angular relation to the heel seats, and the last holes in different sizes of lasts are at different distances from the ends of the lasts; and means for adjustment are necessary to meet these conditions so as to place the sole in the most effective plane relatively to the wipers.

A further feature of the invention consists in novel means for supporting a last in lasting position relatively to the end lasting wipers, the construction shown comprising a member guided for movement toward the wipers and having a last spindle mounted thereon for bodily adjustment relatively thereto lengthwise of the last. Additionally, said member is preferably guided for movement toward and from the wipers in approximately the vertical axis of the last hole, and the last spindle is mounted for bodily right line adjustment on said member lengthwise of the last and comprises a base and a last pin pivoted on the base to tip lengthwise of the last.

Means for bodily lengthwise adjustment of the last pin enables the operator to provide for the differences in distance from the

last holes to the ends of lasts; and this adjustment means in cooperation with other means for tilting adjustment of the last pin lengthwise of the last permits the operator to adjust and position the insole in the proper plane for effective wiping down pressure under varying angular relations of the last holes to the plane of the sole and under varying linear relations of the last holes to the ends of the lasts and constitutes a feature of the invention.

In making such adjustments, the last pin in the construction shown may be moved forwardly or backwardly with relation to the supporting member or rod, depending upon the size of the last and the angle of the last hole relatively to the plane of the insole, to locate the pivot of the last pin so that the pin will automatically tip backwardly in the holes of lasts of different sizes and last hole locations and angles in response to upward pressure of the last against the wipers. This condition may be obtained by locating the pivot of the last pin forwardly of the supporting rod with the rod approximately in alinement with the last hole. Vertical movement of the support and holddown to clamp the last and sole between them, or vertical movement or pressure of the last against the wipers when projected over the bottom of the last will therefore tip the last pin backwardly in the last holes of the different lasts and press the end of the last hard against the clamping band.

When the upper materials are stiff and relatively heavy, positive power-effected forward closing movement of the wipers over the heel seat may damage the upper or strain operating parts of the machine. To avoid such consequences, and to improve in general the operation of overlaying means upon a shoe, a further feature of the invention consists in novel controlling and operating mechanism for overlaying means, the illustrative construction comprising novel mechanism to move the wipers yieldingly forward over the heel seat combined with means arranged to permit said wipers to yield upwardly in response to pressure of the shoe materials, this arrangement in the construction shown also permitting the wipers to climb up over the edge of the heel seat as hereinbefore explained. Preferably, the wipers are yieldingly closed over the heel seat as they bodily and yieldingly move lengthwise of the last toward and over the heel seat.

Despite arrangements for adjusting the last and shoe in cooperative relation to the path of bodily wiper movements, the operator will sometimes neglect to avail himself of the adjustments provided and consequently the end of the shoe will be presented at an angle to this path of bodily move-

ment so that the wipers may not always be positioned to conform to the end of the last.

To remedy this and other conditions of abnormal resistance to closing movement of a

5 wiper or wipers, a feature of this invention comprises a wiper construction having novel means affording provision for yield in response to resistance to such closing movement, the construction shown embodying
10 pivoted wiper plates supported in carriers mounted for independent wiper closing and opening movements about the pivot of said wipers as a center, the wiper operating means including independent connections to these
15 carriers constructed to yield in response to abnormal resistance to permit automatic relative adjustment of the wipers to the contour and position of the shoe. In the illustrative construction, wherein the wiper closing movements are effected by pinions that
20 move bodily forward with the wipers and are operated by relatively stationary rack bars, provision is afforded for yield of the rack bars each independently of the other
25 when abnormal resistance is encountered by the respective wipers to permit one or both of the wipers to continue its forward movement without corresponding closing movement or to be wedged laterally outward by
30 resistance of the shoe materials.

The described and other features of the invention, including certain novel operating means for clamping the last in position and for operating the end wipers, are more fully
35 described in the following detailed specification read in connection with the accompanying drawings, and in which:

Figure 1 is a front elevation of a machine embodying the present invention, with parts
40 broken away and in section for clarity of illustration;

Fig. 2 is a side elevation of the machine, parts being similarly broken away and in section;

45 Fig. 3 is a vertical section through the upper part of the machine, on an enlarged scale and with the wipers retracted;

Fig. 4 is a similar view with the wipers partially projected and with the last raised and clamped;

50 Fig. 5 is a front elevation of the upper part of the machine on an enlarged scale, with certain of the parts broken away and other parts shown in section;

55 Fig. 6 is a top plan view of the mechanism shown in Fig. 3, with the last and shoe removed and with parts at the rear of the machine broken away to disclose operating mechanisms;

60 Fig. 7 is a fragmentary transverse section taken on the line VII—VII of Fig. 6;

Fig. 8 is a transverse vertical section taken on the line VIII—VIII of Figs. 3 and 6.

Fig. 9 is a top plan view of the mechanism

shown in Fig. 3, the wiper plates and wiper-carrying head being removed;

Fig. 10 is a fragmentary transverse section taken on the line X—X of Fig. 9;

Fig. 11 is a fragmentary transverse section taken on the line XI—XI of Fig. 9;

Fig. 12 is a vertical sectional view of the last supporting means in one position of adjustment relatively to the clamping band and wiper plates;

Fig. 13 is a view similar to Fig. 12 with the last supporting means in a different position of adjustment;

Fig. 14 is a view in elevation, partly in section, of the motion arresting disk and its operated part;

Fig. 15 is a plotted detail of the wiper-head operating cam;

Fig. 16 is a plotted detail of the last jack and holddown operating cam; and

Fig. 17 is a plotted detail of the cam for operating the clamping band.

From a suitably formed base, a column 1 rises upwardly and is crowned by a frame 8 housing part of the operating mechanism. At the top of the column at its rear, a bracket 2 extends rearwardly and upwardly forming a bearing in which is journaled the rear end of a worm shaft 3, and the hub of a power driven pulley 4, loosely sleeved on the shaft. The pulley is cupped to form the cup member of a cone clutch, the cone member 5 of which is sleeved on the shaft 3 for free longitudinal sliding movement and has its sleeve portion formed with the usual annular groove to receive the pins and rolls projecting inwardly from the bifurcated upper arm 6 of a bell-crank clutch shifting lever pivoted to the frame 8 at 7.

Forwardly of the clutch cone and shifting lever, the shaft carries and rotates a worm 9 (Fig. 8) engaging with a worm gear 10 carried by a driven cam shaft 11 journaled in and extending transversely of the frame 8 and having one end projecting outwardly beyond the side of the frame. The worm gear is mounted on this projected portion of the shaft and with the worm 9 is preferably protected from dust and dirt by a suitable inclosing housing (Fig. 8). The extremity of the projected portion of the shaft 11 extends beyond this housing and carries a motion arresting or stop disk 12, having spaced notches 13 and 14 in its periphery forming stop shoulders to be engaged by the end of an arm 15 at the upper end of one of the bifurcations 6, this arm carrying a roller 16 to ride upon the periphery of the disk.

A coiled spring 17 sleeved on the shaft 3 between the two members of the cone clutch operates normally to move the cone member 5 out of clutching engagement with pulley 4 and to position its arm 15 to arrest rotation of the cam shaft 11 when the disk 12 is posi-

tioned to permit the arm 15 to enter into one of the notches 13, 14 under the impulse of the spring which normally presses the roller 16 against the periphery of the disk. The arm 15 is moved out of the disk notch and the clutch thrown in to start or restart the rotation of the cam shaft and the operation of the machine, by means of a rod 18 pivoted at its upper end to the lower arm of the clutch shifting bell crank lever and pivoted at its lower end to a treadle 19 at the base of the column 1. When the clutch is moved and shaft 11 begins to rotate, the roller 16 on arm 15 rides upon the periphery of the disk and holds the cone member 5 in clutching position until the next notch in the disk periphery permits the spring 17 to force the arm 15 into the notch and coincidentally to retract the clutch member 5.

The shaft 11, between the walls of the frame 8 carries three disks 20, 21 and 22, effective respectively to control and operate in timed relation the wipers, the last jack and hold down, and the clamping band. The disks 20 and 22 have grooved cam faces and the disk 21, controlling the last jack and hold down, has its peripheral face formed as a cam surface against which bears a roller 23 carried at the rear end of a lever 24 pivotally mounted at 25 on the frame 8 adjacent to its rear end and having slotted bifurcations at its forward end, embracing pins 26 outstanding laterally from the head of a cylinder 27 mounted for vertical sliding movement in guides 28 attached to the front of the column.

A rod 29 extends axially through the cylinder, its lower end being guided in the bore formed in a screw plug 32 closing the lower end of the cylinder and its upper end extending through and beyond the head of the cylinder. A coiled spring 31 is sleeved on the rod within the cylinder 27 with its lower end abutting the screw plug 32 and its upper end acting against a stop collar 30 formed on the rod, and normally tends to move the rod upwardly until the collar 30 engages the head of the cylinder (Fig. 5). The spring 31 acts as a yielding connection between the cylinder 27 and the rod 29 when lever 24 is moved to lift the cylinder and also permits the rod 29 to yield downwardly relatively to the cylinder in response to downward pressure on the rod greater than the strength of the spring.

The upper end of the rod 29 is shouldered down to receive a block 33 which is fixedly attached thereto and which has its upper face provided with a dove-tailed groove therein extending lengthwise of the machine. A similarly shaped rib depending from a superposed block 34 is seated in this groove and is adjustable with the block 34 transversely of the rod 29 lengthwise of the machine by means of a threaded adjusting

spindle 35 engaging a threaded bore in the depending rib of block 34 and held against bodily longitudinal movement by a plate 36 held between collars on the adjusting rod and attached to the front edge face of the lower block 33. Preferably, a handle 37 is provided for turning the spindle to adjust the position of the block 34 relatively to the longitudinal axis of the rod 29 and lengthwise of the machine.

The adjustable block 34 is formed with bifurcated upstanding ears 38, in which the lower and enlarged end of a spindle 39 is mounted, the pivot pin 40 to which the lower end of this spindle is secured being journaled between said upstanding ears to permit swinging movement of said spindle in a direction longitudinally of the machine and of a last supported by said spindle, as will be seen. Above its base, the spindle 39 is formed with a collar 46 forming an abutment against which seats the lower end of the coiled spring 45 sleeved on the spindle and engaging at its upper end with a sleeve 41 sliding upon the spindle 39 and having its lower end enlarged to form a housing for the spring 45. This sleeve has its upper end closed and reduced in diameter to form a nib 42 acting as a last pin to engage in the hole or thimble of the last to support the last. This sleeve is loosely held upon the spindle 39 and is guided to slide longitudinally thereon by a pin 47 extending laterally from the sides of the spindle 39 and in aligned vertical guide slots 48 in the sleeve 41.

The pivot pin 40 of the spindle is extended beyond the ears 38 at one side of the block 34 and enlarged in diameter to receive the hub of a depending ratchet plate 49. This hub is rigidly connected to the pin and has loosely sleeved thereon the upper end of an arm 51 carrying on one side a pivoted dog or pawl 50 positioned to engage the ratchet plate 49 to lock the pin 40 and the last spindle against forward swinging movement. This dog 50 has a tail 52 extending through and guided by a vertical slot formed in a plate 53 depending from the front of the frame. A coiled spring 54 normally tends to swing the forward end of the dog 50 into engagement with the ratchet 49. In the lowered position of rod 29, the tail of the dog engages the plate 53 at the lower end of the slot and swings the forward end 50 of the dog out of engagement with the ratchet 49, permitting the last spindle 39 to be swung forwardly with its last. When the rod 29 is raised to clamp the last with its shoe upper, as will be later explained, the tail of the dog will be moved clear of the lower end of the notch and the forward end of the dog 50 will cooperate with the ratchet 49 to hold the last spindle against forward swinging movement.

The last spindle is arranged to be swung

rearwardly on its pivot 40 coincidently with the raising of the last supporting rod 29 and through the actuation of the means for so raising the rod. The lower end of the arm 51 which carries the dog 50, is pivotally connected by link 55 to the upper end of a bell crank lever 56 pivotally mounted on a pin 57 projecting from the side of the frame 8. This lever has its rear end pivoted to a block 60 slidably mounted upon a rod 58 having an enlarged upper end pivotally connected at 59, to the cam actuated lever 24. A coiled spring 61 is sleeved upon the rod 58 below the block 60 and engages said block and an adjusting nut 62 on the lower end of the rod. Upward movement of the forward end of lever 24 to lift the last supporting rod 29, will, through the yielding connections afforded by rod 58, spring 61 and bell crank lever 56, tend to rock the arm 51 in a direction to cause the dog 50 to swing the engaged ratchet and the last supporting spindle 39 rearwardly of the machine and in a direction toward the heel end of a last supported upon the spindle. If opposition to this rearward movement of the last spindle is encountered which is greater than the force of the spring 61, the rod 29 will be moved upwardly without any rearward swinging movement of the last spindle, the rod 58 sliding upwardly through the block 60 and compressing the spring 61.

At opposite sides of the front of the machine bearing brackets 63 are secured to the column 1 and to the frame 8 in vertical alignment. Complementary bars 64 are guided in these bearings and are connected for simultaneous upward and downward movement by pivoted links 65, whose adjacent ends overlap and are slotted conjointly to embrace pin 66 laterally outstanding from the cylinder 27. The outer ends of these links are also slotted and engage outstanding pins 67 at the lower ends of the bars 64. Upward movement of the cylinder 27 through the cam actuated movement of the lever 24 will effect through these connections, simultaneous movement of the bars 64 in the opposite direction—i. e.—when the cylinder moves upwardly the bars move downwardly and vice versa.

The upper ends of the bars 64 are bridged by a cross piece 68 having a centrally disposed and rearwardly extending arm 69 which is formed at its rear end with a vertical bore 70 threaded at its upper end to receive a threaded sleeve 74. The reduced upper end of the shank portion of a rod 71, having its lower and enlarged portion terminating in a holddown member or foot 72, extends upwardly through the sleeve and is maintained in determinate relation thereto by a collar 75 which rests on the flanged upper end of the sleeve. The reduction in the diameter of the rod 71 provides a shoulder

73 which is maintained against the lower end of the sleeve 74 by the collar 75. Obviously the holddown may be adjusted vertically by turning sleeve 74. To prevent turning movement of the holddown a longitudinal slot is provided in the lower enlarged portion of the rod 71, and a pin 76 engaging in this slot prevents such rotation. Preferably, a lock nut 77 is employed in conjunction with sleeve 74 to fix it in adjusted position. The holddown 72 is preferably positioned substantially in vertical axial alignment with the rod 29 to engage the sole or insole on a last seated on the last pin 42 to clamp the last between it and the last supporting means when said means with the last is raised and a corresponding downward movement is imparted to the holddown through the medium of the bars 64 and links 65. It is evident that the cylinder 27, rod 29, and spindle 39 with its sleeve 41, form a jack to support the last in position for lasting, and that by means of the block 34 the spindle may be adjusted forwardly or rearwardly relatively to the vertical axis of the rod to cause it in operation to assume different positions about the axis of the pivot pin 40 to incline the bottom of the last and shoe sole at varying angles to the lasting devices, as illustrated by Figs. 12 and 13. As suggested also by Fig. 12, the block 34 may be so adjusted as to cause the last pin or spindle to incline rearwardly toward the heel band when the shoe is in position for the operation of the wipers, thus rendering the downward pressure of the wipers on the heel seat effective with a tendency to tip the spindle and the shoe still farther rearwardly and assisting in seating the shoe firmly against the rear end portion of the band during the lasting operation.

The inverted last when mounted on the last pin 42 of the last spindle in the usual manner, is designed to be engaged by an end embracing band which clamps and conforms the upper to the sides of the last at one end,—as shown herein the heel end of the last,—and holds the last with its shoe upper and insole for the operation of the lasting wipers. A bracket plate 80 is secured to the front face of the frame 8 adjacent to its upper edge to receive a pin 81 which serves pivotally to interconnect the overlapped rear ends of carrier members or plates 79. The inner edges of the carrier plates adjacent to their point of pivotal connection are curved to correspond substantially with the contour of the rear of the last and shoe and have attached thereto and upstanding therefrom similarly shaped pressure members 82. From the forward or outer ends of the conforming or pressure members 82 outwardly, the carrier plates 79 are cut away transversely of the machine. Positioned within these cutaway portions

of the carrier plates are a series of pressure members 83 pivotally mounted between the bifurcated forward ends of plungers 84 by means of transverse ears 85 and pivot pins 86. The plungers 84 are guided in transverse bores in the carrier plates and the pressure members have downwardly extending arms 87, slotted at their outer ends to embrace rods 88 secured to and depending from the carrier plates and having flanges 89 adjacent their upper ends, against which the outer ends of the depending arms 87 are held by coiled springs 90 sleeved upon the rods between the arms 87 and adjusting nuts 91. The series of pressure plates 83 will be positioned at opposite sides of the last and shoe upper and will extend longitudinally of the shoe upper and form a substantially continuous pressure surface at the opposite sides of the shoe, and in conjunction with the pressure members 82, form a substantially continuous pressure surface which will extend around the side of the shoe and last at one end of the last. The pivotal mounting for the pressure members 83 enables these members to turn upon substantially horizontal axes to conform to the vertical contour of the sides of the last and shoe. They are independently adjustable toward and from the opposite side faces of the last by means of threaded sleeves 94 screwing into the outer ends of the transverse bores in the carrier plates 79, these sleeves cooperating also with nuts 95 to vary the tension of coiled springs 93 sleeved on reduced sections 92 of the plungers 84 between the adjusting sleeves and the enlarged inner ends or heads of the plungers. A flexible U-shaped clamping band 78 is attached to the series of pressure members 83 in any suitable manner, preferably by means of screws 96 inserted in the pressure members from the clamping band at points adjacent to its lower edge. Preferably, the lower edge of the band is channeled to provide a flap to cover the head of attaching screws 96 and to prevent injury to the upper materials. The clamping band is yieldingly connected with the end pressure members 82 by means of screws 97 attached to and extending from the clamping band through bores in the pressure members 82 and carriers 79. The carrier plates are each counterbored to provide a socket in which a coiled spring 99, sleeved about the shank of the screw 97, is held by a nut 98 threaded upon the outer end of the screw 97 and serving yieldingly to hold the clamping band to its seat. This yielding connection permits the band to move away from its seat on the conforming plates 82 when the band is fully opened. Coiled springs 100 attached to the outer rear edges of the carrier members 79 and anchored to the sides of the frame 8, normally hold the carrier plates

with the clamping band in fully opened position.

The rear edges of the carrier plates are inclined outwardly and forwardly to form wedge faces and are engaged at opposite sides of the pivot point 81 by rollers 102, at the forward ends of spaced and complementary thrust bars 101, guided for longitudinal reciprocating motion lengthwise of the machine by screws 103 (Fig. 9) seated in the frame 8 and extending through longitudinal guide slots formed in the thrust bars. The rear ends of the thrust bars are formed as rods which project through bearings in a cross bar 104 of the frame. These thrust bars are reciprocated toward and from the rear edge of the carrier plates 79 by means of a bell crank lever 105 (Fig. 4) journaled between the sides of the frame 8 below the thrust bars and having one end provided with a roller 106 seated in a cam groove 107 formed in the face of the cam 22. The other and upper end of the bell crank lever is formed with teeth to engage a segmental gear 108 attached to a rock shaft 109 journaled in the sides of the frame 8.

Two arms 110 are mounted upon the rock shaft in laterally spaced relation and have their upper ends bifurcated loosely to engage pins 111 projecting laterally from the forward ends of a yoke 112 (Figs. 4 and 9) from which spaced rods 113 extend rearwardly through suitable bearings in the frame 8 and freely through openings in a cross bar 114 spaced from the rear of the frame 8. The ends of the rods are engaged by adjusting nuts 115 at the rear side of the cross bar and coiled springs 116 are sleeved on the rods 113 between the rear of the frame 8 and the forward face of the cross bar and offer yielding resistance to the forward movement of the cross bar. The tension of these springs may, obviously, be adjusted through the nuts 115. The rods projecting rearwardly from the thrust bars 101 likewise project and slide freely through sleeves 117 threaded into opposite ends of the cross bar 114 and yieldingly connected with the rods of the thrust bars by coiled springs 118 sleeved upon the rods between the forward flanged heads of the sleeves 117 and collars 119 fixed to the rods.

When the disk 22 is turned and the bell crank 105 is rocked through the operation of its cam groove 107 to turn the rock shaft 109 through the medium of segmental gear 108, the arms 110 are rocked to move the yoke 112 longitudinally toward the carrier members 79 and through the rods 113 and their connections with the cross bar 114 to operate the cross bar to move the thrust bars 101 forwardly and close the carrier frames and clamping band, compressing the coiled springs 116, 118, the latter transmitting

pressure yieldingly to the members 79, and tensioning springs 106, so that when permitted by the cam groove 107, these springs will act to retract the thrust bar rollers 102 and to open the carrier plates 79. The length of the stroke of the thrust bars and, therefore, the closing movement of the carrier plates is adjusted through the nuts 115, and the yielding pressure brought to bear against the rear edges of the carrier plates by the thrust bars may be varied for each carrier plate independently through adjustment of the sleeves 117.

When a last with its shoe upper and insole is mounted upon the last spindle 42, and the machine started to cause rotation of the cam disk 22 and closing movement of the carrier plates 79, not only will the carrier plates be yieldingly closed, but the pressure members 83 will clamp the shoe upper at the sides of the last under yielding, conforming pressure through the springs 93, so that the upper is conformed to the longitudinal contour of the last, and the pivotal mounting of these pressure members causes them automatically to rock during the closing movement of the clamping band automatically to conform the clamping band and shoe upper to the vertical contour of the sides of the last. The springs 90 normally hold the pressure members against rocking movement so that closing pressure of the carrier members 79 causes these pressure members to rock on their pivots in a predetermined direction, their upper portions swinging outwardly and their lower portions inwardly, and only to such extent as is required for conformation to the vertical contour of the last sides, and the springs 90, when compressed by this conforming movement, assist in holding the pressure members in conforming position under tension. This is also true of the springs 93 and 118 which hold the pressure members in conformation to the lengthwise contour of the last sides under spring tension. It will be evident that the members 79, by reason of their pivotal mounting at the end of the shoe, have a component of forward movement at the sides of the shoe, and that the pressure members 83 thus receive a slight forward movement in the closing of the band which assists in drawing the upper tightly about the heel end of the last.

The clamping band 78 is designed to engage and clamp the upper against the sides of the last from a line adjacent to the bottom face of the last transversely of the sides of the last for a substantial distance and preferably for substantially the full width of the sides of the last corresponding to the counter portion of the shoe, the band engaging the sides of the upper first adjacent to the shoe bottom and then closing in against

the tension of the springs 90 into conforming relation to the contour of the last.

When the last is mounted upon the last pin 42 the last spindle is swung forwardly to clear the holddown so as to permit the last to be inserted upon the last pin 42 without interference by the holddown and the spindle is then swung rearwardly by the operator, downward pressure being exerted to cause the light spring 45 to yield to permit the bottom of the insole to be brought beneath the holddown. When the rear end of the shoe is brought into engagement with that part of the band which is on the conforming plates 82, downward pressure is discontinued and the spring 45 will act to move the last upwardly approximately to lasting position. The treadle 19 is then operated to start the machine, whereupon, the cam 22 effects the closing of the clamping band 78, and the shoe is jacked and positioned for the lasting operation as will be explained more in detail hereinafter.

Subsequent to the clamping of the last and shoe, end lasting wipers are projected up and over the bottom of the last to break down the upstanding marginal portions of the shoe upper over the bottom of the insole and to compact the broken down portions over the bottom of the insole.

This end lasting mechanism is carried by a head or wiper carrier 123 having a rearward extension 141 provided with a longitudinal channel 140 at and within the forward end of which is seated an ear 139 having a stem 142 extending loosely upward through a bore in the head and having its end screw threaded to engage in a threaded bore in the upper end of an inverted cup 143 housing a coiled spring 145 sleeved upon the stem 142 between the top of the head 123 and the upper or closed end of the inverted cup 143. The bottom edge of the cup is spaced above the top face of the head 123 a sufficient distance to permit a determinate maximum compression of the spring 145 by upward movement of the wiper head 123. Preferably, a nut 144 is provided to assist in holding the cup 143 in adjusted position. The ear 139 supports the forward end of the wiper head through the pivotal connection thereto of the upper forked end of a rock arm 138 journaled upon the rock shaft 109 for free turning movement thereon.

The rear end of the extension 141 of the wiper head is supported by a forked arm 146 secured upon a rock shaft 147 which is mounted in bearings in the sides of the frame 8 near its rear end and has a downwardly extending rigid arm 148 carrying a roller 149 at its extremity riding in the cam groove 150 of the cam disk 20. The forked upper end of the arm 146 embraces a link 151 lying within the channel 140 of the rearward ex-

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tension of the wiper head and is pivotally connected to the rear end of said link by a pin 152 passing through the link, the forked arms and into elongated horizontal guide slots (Fig. 6) in the side walls of the channel 140. The forward end of the link 151 terminates at a point rearwardly of the ear 139 and is connected to the extension 141 by a transverse pin 154 extending through the end of the link and guiding in horizontal elongated slots alined with the slots 153 in the side walls of the extension and similarly designated. The pins preferably have a relatively loose fit in the slots to provide for slight relative vertical movement between the pins and the slots. The arms 138 and 146 which support and operate the wiper carrying head 123 are substantially parallel, as shown in Figs. 3 and 4 and thus tend to maintain the wipers in substantially uniform angular relation to the plane of the shoe bottom, the wiper head, however, being permitted to swing yieldingly about the pin 152 as an axis against the tension of the spring 145 in response to resistance of the shoe materials.

The link 151 is provided with an integral, rearwardly extending rod 155 (Figs. 4 and 6) guided through the rear wall 156 of the wiper head and having its end threaded to receive an adjusting nut 158 acting against the rear end of a coiled spring 157 sleeved on the rod 155 between the rear face of the wall 156 and said nut. This spring provides a yielding connection between the wiper operating disk cam 20 and the wiper head 123, so that in the event of substantial opposition to forward movement of the wipers carried by the wiper head, the spring 157 may yield to prevent damage to the operating parts.

The wipers are in the form of pivotally connected plates 120 having inner formed edges to approximate the outline of the end portion of the last when they are closed upon the last. The rear ends of these plates overlap and are pivotally interconnected by a pivot pin 121 located adjacent to the inner edge of the plates and approximately in the vertical plane of the longitudinal median line of the last. These wiper plates are mounted and held within horizontal slots in the forward edges of wiper carrying members 122 which, in turn, fit and slide freely within similarly formed recesses in the forward end of the wiper carrying head 123.

The outer or rear edges of the wiper plates are formed substantially semi-circular in plan view when the plates are in open position and the slots in the carrier members which receive the wipers are similarly formed.

The wiper plates are removably held in their carrier members by vertical pins 124 (Fig. 6) carried by the carrier members and

extending through and engaging the inner ends of curved slots, formed in and extending inwardly from the outer edges of the wiper plates so that the pins permit limited turning movement of the wiper plates in either direction relatively to their carrier members. The wiper plates may be readily removed from their carrier members by removing the retaining pins.

The rear edges of the carrier plates 122 are formed substantially semi-circular in plan view and are provided with teeth which form gear segments 125 arranged to be engaged by pinions 126 located in suitable recesses in the head 123. The groove or recess in the wiper head which receives the carrier members 122 is shaped to conform to the semi-circular form of these members which are loosely held to turn freely in the head by means of screws 127 in the head passing down through slots in the carrier members formed on arcs concentric with the pivot 121 of the wiper plates.

To rotate the pinions 126 and the connected gear segments 125 of the carrier members while the wiper head is being projected bodily forward toward the end of the shoe, each of the pinions 126 is mounted upon a stud 128 (Fig. 8) and also carries a smaller and superposed pinion 129 mounted on a hub of the pinion 126 to turn therewith. These studs and pinions are located at opposite sides of the wiper head. Complementary rack bars 130, also located at opposite sides of the head are guided therein for engagement with the pinions 129. These rack bars are substantially stationary relatively to the reciprocating wiper head, so that through the rack bars, rotary motion is communicated to the pinions 129 and 126 and thence to the wiper carrier gears 125 to close and open the wiper plates as the wiper head is moved toward and from the end of the shoe.

Preferably, the rack bars are yieldingly held against movement with the wiper head in wiper projecting direction since it is desirable to permit the wipers to yield more or less in case abnormal resistance is encountered due to the character of the upper materials or to improper adjustment of the shoe positioning means or wiper mechanism. Accordingly, rods 131 are connected to the rear ends 130 of the rack bars by links 132, these rods having collars 135 formed adjacent their forward ends and extending through bores formed in exteriorly threaded sleeves 133 adjustable in interiorly threaded ears 134 rigidly attached to and upstanding from the sides of the frame 8 (Figs. 2 and 8).

The extremities of the rods 131 extend beyond the rear ends of these sleeves and are threaded to receive adjusting nuts 137 between which and the flanged rear ends of the sleeves coiled springs 136 are sleeved

upon the rods yieldingly to hold the rack bars 130 against forward movement with the wiper carrying head while the collars 135 abutting the opposite ends of the sleeves 133 positively resist rearward movement of the rack bars 130 with the wiper carrying head when it is retracted away from the shoe.

Consequently, in the forward closing movement of the wiper head, the wipers are yieldingly moved against the marginal portions of the upper to avoid damage to the operating parts through unusually heavy resistance to breaking down action of the wipers, while on the reverse movement of the parts when no resistance is encountered, the movement of the wipers is positive.

If for any reason the shoe should be presented to the wipers with the longitudinal median line of its heel end portion at an angle to the path of bodily movement of the wipers, it will be evident that the wiper at one side might encounter abnormal resistance to its closing movement by reason of premature engagement with the shoe. In such an event the yielding wiper operating connections above described permit the closing movement of such wiper to be retarded, the corresponding rack bar 130 being carried along with the wiper against the tension of the spring 136 in the continued movement of the wiper lengthwise of the shoe, while the wiper at the other side continues its normal closing movement, until such time as change in relation between the resistance of the spring 136 and that of the shoe materials permits the first wiper to resume its closing movement. It will be evident, moreover, that the arrangement of the rack bar and the spring may permit the wiper to be moved reversely by wedging action of the shoe during the movement lengthwise of the shoe if such abnormal resistance is encountered. The independently yieldable connections to the wipers thus provided permit the wipers to adjust themselves relatively substantially about their axis of closing movement in conformity to the contour and position of the shoe.

In the event that extreme resistance is encountered to the closing movement of both wipers, the springs 136 will yield and will permit the rack bars 130 to move with the wiper head, the gears 129 and 126 remaining stationary during the yielding movement of the springs or turning reversely due to wedging action of the shoe, thus stopping the closing movement of the wiper plates or permitting them to be partially retracted. Obviously, the tension of the springs 136 may be varied by adjustment of the nuts 137. The sleeves 133 permit independent adjustment of each of the rack bars 130 in a longitudinal direction in order to effect adjustment of the wiper plates for last ends of substantially variant contour.

In the retracted position of the wipers and their carrying head, the arms 138, supporting said head are positioned so that their upper ends are beyond the dead center line of their swinging movement, or other words are rearwardly of vertical line drawn perpendicularly to the axes upon which they turn. Therefore, when the arm 146, and consequently arm 138, is rocked through the action of the cam groove in the disk 20 to move the wiper head forward toward the end of the shoe, the wiper head will be slightly elevated, the movement being in a direction lengthwise of the machine and toward the end of the shoe and having a relatively slight upward component. The path of movement will, therefore, be downwardly inclined until the pin 152 and the pin connecting the arm 138 to the ear 1 reach the dead center of the swing of the arms 146 and 138, which point is reached approximately at the time the wipers engage the upper and press it against the last, after which the forward projecting movement has a slight downward component.

The last, shoe upper and insole are positioned by the initial jacking movement so that the plane of the lower face of the wiper 121 in retracted position is below the plane of the insole on the bottom of the last and preferably slightly below the plane of the bottom of the last. The forward projecting movement of the wiper head will move the wiper plates 121 forwardly and close them into contact with the shoe upper substantially or approximately at the line of merger between the side of the last and the bottom of the last.

The forward projecting movement of the wiper head will continue, and the edges of the wipers engaging the upper material frictionally draw the stock and by the wedging action of the stock are forced to climb up over the edge of the insole as they are advanced forwardly and closed, this climbing action, which serves to draw the upper materials tightly up over the edge of the insole, being permitted by reason of the upward yielding of the wiper head against the tension of spring 145. This yielding movement results in the compression of the spring 145, so that the wiper plates move over the edge of the insole with the force of the tensioned spring 145 acting downward against the wipers and aiding to break down and compact the upper materials over the edge of the insole.

This downward pressure is in a direction substantially perpendicular to the bottom of the insole, and in cooperation with similar upward pressure exerted by the last jack to force the edges of the upper against the bottom faces of the wipers, as will be later explained, is effective thoroughly to iron down and thoroughly to compact the over

worked marginal portions of the shoe upper materials.

The cam groove in the disk 20 is constructed preferably to advance the wipers over the bottom of the insole and partially to retract the wipers, the operation of the machine being automatically stopped at this point to permit the insertion of lasting tacks; subsequently the wipers are again advanced and finally retracted. The operation of the last jacking, shoe clamping and wiper operating mechanism in their timed relation will now be described.

As an aid to understanding the timed relation of the parts, reference is made to the plotted cam paths of the wiper operating, last jacking and clamping band controlling cam, and the motion arresting disk disclosed in Figs. 14 to 17 of the drawings, in which the time periods are divided into twentieths, the division lines being lettered consecutively *a* to *t*, inclusive, in a direction opposite to that of rotation of the cams, the motion arresting disk 12 being divided in like manner to show the relation of its stop notches to the cams.

In the operation of the machine, the pivoted last spindle is first swung outwardly from beneath the holddown 72, (the pawl 50 being released by engagement of its arm 52 with the plate 53 at the lower end of its slot when the machine comes to rest at the end of a cycle), and a last with its shoe upper and insole thereon is mounted in inverted position on the pin 42 of the last spindle with one end, in the present showing the heel end, of the last and shoe upper toward the rear of the machine to be operated upon by the clamping and wiping mechanisms for lasting the heel seat. The last pin being yieldingly supported, may be depressed to enable the last to be mounted on the pin without catching the lower edge of the upper on the pin and pulling it into or against the last thimble.

The last spindle with the last and shoe are then swung rearwardly toward and it may be loosely against the rear end of the clamping band 78, the last spindle being pressed downwardly against the tension of its spring 45 to clear the holddown as the end of the last is moved beneath and beyond the holddown. The last is now released and will be positioned by the spring 45 with its insole above the plane of the wipers and below the holddown as suggested in Fig. 3.

The adjusting screw 35 may now be operated, if necessary, to position the shoe sole at a desired inclination relatively to the plane of the wipers. When the end of the last to be operated upon is substantially different in contour from that of those previously operated upon by the machine, the contour of the wipers may be quickly adapted to the change of contour by turning the

sleeves 133 controlling the rack bars 130. No corresponding adjustment of the clamping band 78 is usually necessary since this band tends to conform itself to different contours of last ends, but if conditions require such adjustment it may be effected as hereinbefore described.

These preliminary steps having been taken, the cycle of the machine may now be started by operating the treadle 19, retracting the stop member 15 and throwing in the clutch to start the rotation of the cam shaft.

When the machine is started, the cam disk 21 first becomes active, lifting the jack rod 29 upwardly and coincidentally pressing the last spindle backwardly toward the clamping band. The upward movement of the spring cylinder 27 causes the holddown 72 to move downwardly to engage the insole and finally depress the last and its rod 29 slightly to position the surface of the insole above the plane of the wipers with the jack spring 31 under tension and with the last spindle yieldingly held by pawl 50 in its backwardly swung position. These actions occur during the first three intervals ("*a*" to "*d*," inclusive) of the cycle and the parts are maintained in this relation by their cam 21 until the wipers start their closing movement. It will be noted by reference to Fig. 4 that as the parts are thus positioned the sleeve 41 is seated against the collar 46 and the shoe is upheld through the tension of the spring 31 against the holddown 72 the position of which is positively determined by its operating connections.

During the above described operation of clamping the shoe, the cam groove in cam disk 22 is practically inactive and only begins to act to close the clamping band about the end of the last and shoe upper as the holddown approaches the limit of its downward movement. As plotted (Fig. 17) the cam groove 107 in the cam disk 22 begins to act against the clamping band to close the clamping band in the third interval of the cycle, the closing movement, as plotted, commencing at the end of the second interval "*c*" and ending during the sixth interval, the clamping band remaining fully closed from this point on until near the end of the cycle when the wipers start on their final retracting movement.

Up to the time that the clamping band reaches fully closed position the cam groove in the wiper cam disk 20 has been concentric and has not acted against the roll 149 and lever 148 to operate the wipers. As the clamping band reaches fully closed position, however, a rise in the cam groove acts against the roll and lever to move the wiper head forwardly to project the wipers over the edge of the insole, the racks and pinions operating to close the wipers as they climb up over the edge of the insole and are tensioned

downwardly to break down the upstanding marginal portion of the upper.

As the wipers begin to close over the edge of the insole, the jack cam 21 acts to lower the spring cylinder 27 and coincidentally to lift the holddown 72 so that the tension of the compressed jack spring no longer is taken by the holddown but is effective to force the marginal portion of the upper against the faces of the closing wiper plates 121 with compacting pressure acting substantially perpendicularly to the plane of the wipers and insole, opposing the downward compacting tension of spring 145 on the wiper plates and it may be, raising the shoe to take up the vertical yield of the wipers to hold the wipers rigidly against vertical displacement during their further advance so that the combined and maximum downward and upward compacting pressures act upon the marginal portion of the upper during the first closing movement of the wipers when maximum compressive force is needed to "break down" the upper. The closing movement of the wipers, as plotted, occurs in the time intervals between "g" and "l" of the movement of wiper cam 20 and the transference of the jack spring tension occurs in the intervals between "i" and "l", representing the movement of the wiper plates inwardly over the edge of the insole. As the wipers approach the limit of their closing movement the jack cam 21 acts to move the jack spring cylinder 27 upwardly, further tensioning the jack spring against the wipers and coincidentally lowering the holddown 72 to engage the insole and to take the pressure of the jack spring off the wipers so as to prevent drag on the wipers as they retract.

This last point is reached at the limit of closing movement of the wipers, the position of the holddown being maintained by cam 21 during the next interval ("l" to "m") of cam movement; during which the wipers are retracting reaching the limit of a first (and partial) retracting movement at the end of the following period ("m" to "n") of cam movement. During this following period the jack cam 21 lowers the jack spring cylinder 27 and lifts the holddown so that the compressed jack spring again acts against the face of the wiper plates which have been only partially withdrawn and are still projected over the edge of the insole. Pressure of the wipers against the last, acting against the pivoted last pin, holds the end of the last hard against the clamping band.

The cam groove in wiper cam 20 is practically inactive to close the wipers during the next interval ("n" to "o") at the end of which notch 14 on the motion arresting disk 12 is aligned with the roller 16 on arm 15, which is forced into the notch by its spring, stopping further rotation of the cam

shaft 11 as previously described. When the operation of the machine is thus arrested, the wipers are partially retracted from their first advance and are about to close over the insole for a second wiping movement and the jack cylinder 29 has been lowered and the holddown lifted, thereby again putting the upward pressure of the tensioned jack spring against the faces of the wipers.

This point or halt in the cycle may be utilized for the insertion of lasting tacks to fasten the edge of the wiped over marginal portion of the shoe to the insole; although, it is within the province of the invention to arrange the notch 14 in the disk 12 to cause the motion arresting action at a different and later stage of the operation such, for instance, as when the wipers are finally retracting but before they are withdrawn from over the edge of the insole.

Assuming that the lasting tacks are inserted in this interval the machine is again started by operating the treadle 12. The wipers are now again closed fully over the insole with upward compacting pressure against the wipers by the jack spring and with downward pressure against the wipers from the spring 145 of the wiper head, this pressure being slightly reduced since the marginal portion of the upper has been "laid down" over the edge of the insole by the first closing movement of the wipers so that in the preceding retraction and in the present (and second) closing movement, the upward pressure of the insole and overlaid upper against the wipers is reduced. As the wipers approach their limit of closing movement the jack cam again acts to lower the holddown and relieve the pressure of the jack spring against the wipers, as shown in Fig. 16.

The wipers reach the limit of their second closing movement at the end of period "q" to "r" in the cam plot and immediately start to retract. Coincidentally the 110 groove in the clamping band cam 22 acts to open the clamping band which is fully opened by the time the wipers are fully retracted beyond the edge of the insole. Coincidentally with retracting movement of the wipers and opening movement of the clamping band, the jack cam 21 acts to relieve upward pressure against the wipers by lowering the spring cylinder 27 to its initial position at the beginning of the cycle, this position being reached when the wipers reach fully retracted position. As the jack rod 29 reaches the limit of its downward movement, the tail 52 of the pawl 50 strikes the plate 53 at the lower end of its slot and releases the pawl so that the last spindle 33 is automatically released and falls forwardly by gravity to a convenient position for the removal of the last and shoe. The machine operation is automatically halted

at the end of the wiper retracting, clamping band opening and jack lowering movements by the roller 16 dropping into notch 13 and withdrawing the clutch. The machine is now ready for another cycle of operations similar to that previously described.

A preferred embodiment and construction of lasting devices and their power-operated mechanism has been illustrated, in the accompanying drawings and described herein but it will be understood that the construction and arrangement of the parts may be varied within the spirit of the invention and the scope of the appended claims.

The method of lasting shoes exemplified by the "climbing-wipers" of the described lasting mechanism and which consists generally, in forming the upper to the sides of the last and down over the margin of the sole on the last bottom by wiping the upper inwardly over the bottom edge of the last and over the margin of the sole by moving wipers upwardly and inwardly over the the margin of the sole against heavy yielding resistance to upward movement producing strong frictional indrawing pressure on the upper at the bottom edge of the last and downwardly compacting pressure on the upper inwardly of said edge, is not claimed herein but forms the subject-matter of a divisional application, Ser. No. 169,749, filed May 19, 1917.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described, in combination, a flexible end-embracing band, a series of pressure-applying members acting against each side of said band for substantially its full width and constructed and arranged to yield each independently in response to pressure against the band and last in such direction as to adjust themselves automatically to cause the band to press and conform the shoe upper closely to the longitudinal and vertical contours of the sides of the last, a common carrier for each series of said pressure members in which said members are independently mounted, and means for moving said carriers to apply pressure to the shoe through said members.

2. In a machine of the class described, in combination, a flexible end embracing band, and means for closing said band to conform the shoe upper to the sides of the embraced end of the last including a series of pressure-applying members at each side of the band engaging the band for substantially its full width and operative responsively to pressure against the last and band to tilt about axes extending longitudinally of the band and shoe to force the band and shoe upper into conformity with the vertical contour of the sides of the last, spring means

tending to resist such tilting movement of the members, a common carrier for each series of said pressure members, and means for moving said carriers toward the opposite sides of an embraced last end.

3. In a machine of the class described, the combination of an end embracing band, a series of pressure applying members at each side of the band forming a substantially continuous surface longitudinally of each side of the band, a common carrier for each series of pressure members, means for moving said carriers independently of and relatively to the last to cause said members to close the band upon the last, and mountings for said members permitting independent and automatic adjustment of the members against yielding resistance to conform the band and upper to the longitudinal and vertical contours of the sides of the last responsively to pressure of said members against the band and last.

4. In a machine of the class described, in combination, a flexible end embracing band, a series of independent pressure-applying members extending longitudinally of each side of said band and arranged for independent automatic adjustment through pressure to cause the band to conform the upper to the longitudinal and vertical curvatures of the sides of an embraced last end, a common carrier for each series of said members, having yielding pressure-applying connections with each member, and means for moving said carriers toward and from the sides of a last and shoe end within said band.

5. In a machine of the class described, in combination, a flexible end embracing band, and closing means for said band arranged to be operated independently of an embraced last and shoe to force it toward the shoe and including a longitudinally extending series of independently yielding pressure-applying members engaging each side of said band for substantially its full width and constructed and arranged for independent automatic adjustment in different directions responsively to pressure, against the last and shoe to cause said band to conform the upper to the longitudinal and vertical curvatures of the sides of an embraced last end.

6. In a machine of the class described, in combination, a substantially U-shaped flexible end embracing band, and band closing means comprising a series of pressure-applying members at each side of said band constructed and arranged for independent automatic adjustment through closing pressure against the sides of the embraced end of a last to cause the band to conform the upper to the longitudinal and vertical curvatures of the sides of the last, a common carrier for each series of pressure members

having yielding connection with each pressure member, and means for moving said carriers and pressure members toward the opposite sides of an embraced last end.

7. In a machine of the class described, in combination, a flexible end embracing band for conforming a boot or shoe upper to the sides of an embraced last end, a series of pressure-applying members at each side of the band, a common carrier for each series of members in which they are mounted independently to yield bodily away from a last and independently to rock against yielding resistance about axes extending lengthwise of a last responsively to pressure against the band and last side, and means for moving said carriers toward and from opposite sides of the last end.

8. In a machine of the class described, in combination, a substantially U-shaped end embracing band, a plurality of pressure-applying members forming a substantially continuous pressure surface extending around substantially the entire band and including a series of independently yielding pressure members at each side of the band, a common carrier for each of said series, springs against which said members are yieldable relatively to their carriers and means for moving said carriers toward and from the opposite sides of the shoe embraced by said band.

9. In a machine of the class described, the combination of a flexible member for conforming a boot or shoe upper to the surface of its last, and pressure members to engage said flexible member to force the upper material into conforming contact with the surface of the last, said pressure members being pivoted to turn about axes extending lengthwise of the flexible member in response to pressure against the last, and resilient means tending to oppose said turning movement in one direction.

10. In a machine of the class described, a flexible end embracing band for conforming a boot or shoe upper to the sides of the embraced end of its last, and a series of pressure members supporting said band and arranged independently to turn against yielding resistance about axes extending longitudinally of an embraced last in response to pressure against the sides of said last, and yielding means tending to resist turning movement of said members.

11. In a machine of the class described, in combination, a flexible end embracing band for conforming a shoe upper to the sides of the embraced end of a last, opposed series of pressure applying members extending longitudinally of the sides of said band at opposite sides of the band, a common carrier for each series of pressure members on which said members are supported independently to swing against yielding resist-

ance responsively to pressure against a last automatically to adjust themselves to the vertical contour of the sides of the last, and yielding means tending to resist such swinging movement of the members.

12. In a machine of the class described, in combination, a flexible end embracing band for conforming a shoe upper to the sides of the embraced end of its last, a series of pressure-applying members at each side of said band, a common carrier for each of said series on which said pressure members are pivotally mounted for independent swinging movements about axes extending lengthwise of an embraced last responsively to pressure against the band and last to conform the band and upper to the vertical contour of the sides of the last, spring means tending to resist said movements of the members in one direction, and means for moving said carriers toward and from the embraced end of the last.

13. In a machine of the class described, a flexible shoe end embracing band, a series of pressure applying members at each side of the band extending from the front end of the band rearwardly, carriers on which said members are supported independently of one another to yield laterally of the shoe, and thrust members movable lengthwise of the shoe in engagement with said carriers to force the carriers inwardly toward the sides of the shoe.

14. In a machine of the class described, a flexible shoe end embracing band, members arranged at opposite sides of said band for closing the band inward laterally of the shoe, said members having outwardly directed faces inclined to the lengthwise dimension of the shoe, and thrust members restrained from movement laterally of the shoe and movable lengthwise of the shoe in wedging engagement with said faces to force said members toward the sides of the shoe.

15. In a machine of the class described, the combination of a flexible member for conforming a boot or shoe upper to the surface of its last, a carrier member, means for moving the carrier member toward or from the side of the last independently of movement of the last, a pressure member attached to said flexible member and supported by said carrier member, and spring means for projecting the pressure member toward the side of the last and shoe upper and relatively to the carrier member.

16. In a machine of the class described, the combination of a flexible member for conforming a boot or shoe upper to the side of its last, a carrier member, means for moving the carrier member toward and from the side of the last and shoe upper, a pressure member supported by the carrier member and pivotally mounted to turn against yielding resistance about an axis

extending longitudinally of the flexible member responsively to pressure against the flexible member and last, and spring means normally to hold the pressure member projecting relatively to the carrier member in the direction of the side of the last and shoe upper.

17. In a machine of the class described, the combination of a flexible member for conforming a boot or shoe upper to the side of its last, and a pressure-applying backing attached to the flexible member by yielding connections permitting the flexible member to move relatively to said backing.

18. In a machine of the class described, the combination of a flexible member for conforming a boot or shoe upper to the side of its last, a pressure-applying backing member having a seat for said flexible member, and a spring connection between the flexible member and the backing member yieldingly to hold the flexible member to its seat on said backing member.

19. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the side of its last at one end of the last, carrier members pivotally connected together closely adjacent to the end of the last and supporting a plurality of yielding pressure members connected to said flexible member, and means for moving said carrier members and pressure members to close the flexible member against the sides of the last and shoe upper at said end of the last.

20. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the sides of its last at one end of the last, carrier members pivotally connected together adjacent to the end of the last and supporting a plurality of yielding pressure members connected to said flexible member, means for moving the carrier members and pressure members to close the flexible member against the sides of the last and shoe upper at said end of the last, and pivoted wiper plates positioned to close over the bottom of the last and having their pivot approximately in alignment with the axis of the pivot of the carrier members.

21. In a machine of the class described, the combination of a flexible member for conforming a boot or shoe upper to the side of its last at one end of the last, carrier members for said flexible member pivotally connected together adjacent to said end of the last, and a series of independent pressure members on each carrier member to press said flexible member against the shoe upper at the sides of the last.

22. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the side of its last at one end of the last, carrier members for

said flexible member pivotally connected together adjacent to the end of the last, and a series of independently movable spring pressed pressure members on said carrier members arranged to press the flexible member against the shoe upper at the side of the last.

23. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the side of its last at one end of the last, carrier members for the flexible member pivotally connected together adjacent to said end of the last, and a series of independently movable spring pressed pressure members supported by said carrier members and pivotally mounted independently to turn transversely of the length of the flexible member.

24. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the side of its last at one end of the last, carrier members for the flexible member pivotally connected together adjacent to said end of the last, and means for yieldingly operating said carrier members yieldingly to close the flexible member against the side of the last at said end of the last.

25. In a machine of the class described, the combination of a flexible end embracing member for conforming a shoe upper to the sides of its last at one end of the last, carrier members for the flexible member pivotally interconnected and provided with wedge faces, and means for yieldingly pressing said carrier members and the supported flexible member against the sides of an embraced last, comprising thrust members arranged to act against said wedge faces.

26. In a machine of the class described, the combination of a flexible end embracing band for conforming a shoe upper to the sides of its last at one end of the last, a series of pressure-applying members acting against said band and extending along the opposite sides of the band, and means for transmitting yielding closing pressure to said members, said means including wedge-faced pressure-transmitting members at opposite sides of the longitudinal median line of an embraced last, and thrust rolls acting against said wedge-faced members.

27. In a machine of the class described, the combination of a flexible substantially U-shaped end-embracing band, a series of pressure applying members embracing said band, and means yieldingly to press said members against said band to conform a shoe upper to the sides of its last, said means including wedge faced members at opposite sides of the longitudinal median line of an embraced last and thrust rolls acting against said wedge-faced members.

28. In a machine of the class described,

the combination of a flexible member for conforming a shoe upper to the sides of its last, carrier members for the flexible member pivotally connected together adjacent to the end of the last, a series of pressure members on each carrier member independently yieldable transversely away from the last and attached to said flexible member, and means for turning the carrier members upon their pivotal connection yieldingly to close the flexible member against the sides of the last at said end of the last.

29. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the sides of its last at one end of the last, carrier members for the flexible member pivotally interconnected adjacent to said end of the last and each provided with a plurality of transverse bores therein, plungers slidably mounted in said bores, springs arranged to hold the plungers projected in said bores, a pressure member pivotally attached to each plunger and connected to said flexible member, and means for operating the carrier members to close the flexible member against the sides of the last and shoe upper at said end of the last.

30. In a machine of the class described, the combination of a flexible member for conforming a shoe upper to the sides of its last at one end of the last, carrier members for the flexible member pivotally interconnected adjacent to said end of the last, a series of independent pressure members connected to said carrier members and pivotally mounted for independent movements, and means yieldingly to resist the turning of said pressure members about their pivots.

31. In a machine of the class described, the combination of a flexible member adapted to embrace a shoe upper mounted upon its last at one end of the last, a series of pressure members to engage said flexible member at each side of the last at said end to force the flexible member into last conforming contact with the sides of a shoe upper at said end of the last, the pressure members of each series together forming a substantially continuous surface to engage said flexible member, means for pivotally supporting the pressure members, and means yieldingly to resist the turning of each pressure member about its point of pivotal support.

32. In a machine of the class described, the combination of a flexible substantially U-shaped end embracing band for conforming a boot or shoe upper to the surface of a last at one end of the last, and means for forcing said band into last conforming contact with the upper materials independently of movement of a last including a plurality of pressure members forming a substantially continuous pressure surface extending

lengthwise along each side of the band and mounted for independent yielding contact with said band to conform the band and upper materials to the surface of the last.

33. In a machine of the class described, the combination of a substantially U-shaped end embracing member for conforming a boot or shoe upper to the side surfaces of a last at one end of the last, and means for forcing said end embracing member into last conforming contact with the upper materials independently of movement of a last including a plurality of spaced independent pressure applying members at opposite sides of the longitudinal median line of the last arranged to be engaged with the end embracing member under pressure and independently to yield to conform the end embracing member and upper materials to the side surfaces of the end of the last.

34. In a machine of the class described, the combination of end embracing means arranged to be operated to embrace and conform a shoe upper to the sides of its last at one end of the last, a last support and an opposed member relatively movable to clamp a last between them, and means operated by said relative last clamping movement of the parts to force the last and shoe upper lengthwise in upper conforming contact under substantial pressure with said end embracing means at the extremity of the last.

35. In a machine of the class described, the combination of means for embracing and conforming a shoe upper to the sides of its last at one end of the last, a last support, a member to oppose the last support, means for relatively moving said support and opposed member to clamp the last between them, and means operated by such relative movement of the support and opposed member to move the last and shoe upper lengthwise in a direction to force the shoe upper into contact with said conforming means.

36. In a machine of the class described, the combination of means for embracing and conforming a shoe upper to the sides of its last at one end of the last, a last support, a member to oppose the last support, means for relatively moving said support and its opposing member to clamp the last between them, and means operated by said means for relatively moving the support and member yieldingly to force the last endwise toward said conforming means.

37. In a machine of the character described, the combination of means for conforming a shoe upper to the sides of its last at one end of the last, opposed members relatively movable toward each other to clamp a last between them, mechanism for moving said members to clamping position, and means organized automatically to force the last in the direction of its length and to

ward said conforming means responsively to movement of said mechanism to clamp the last.

38. In a machine of the class described, the combination of means for conforming a shoe upper to the sides of its last at one end of the last, clamping means to support and hold the last including members relatively movable toward and from each other and constructed and arranged to force the last in the direction of its length toward said conforming means at said end of the last, and means for operating said members to clamp a last between them and coincidently to move the last lengthwise of the conforming means, said clamping means being arranged to yield lengthwise of the last to provide a yielding contact of the shoe upper with said conforming means at the extreme end of the last and shoe upper.

39. In a machine of the class described, the combination of end embracing means arranged to be operated to embrace and conform a boot or shoe upper to one end of a last, a last support and an opposed member relatively movable to clamp a last between them, means to effect relative clamping movement of said support and member, means operated by said relative clamping movement to force the last support with its last and upper materials lengthwise in upper conforming contact under pressure with the end embracing means at the end of the last and yieldingly to maintain the last support in such pressure applying position, and means to actuate the end embracing means to embrace the upper and last to conform the upper to the sides of the last at its end.

40. In a machine of the class described, the combination of a clamping band arranged to be closed to embrace and conform a boot or shoe upper to one end of a last, a last support and an opposed member connected for simultaneous movement toward each other to clamp a last between them and for movement from each other, mechanism for effecting relative last clamping movement of the support and member, means operated by said mechanism to force the last support with its last and upper materials lengthwise in upper conforming contact under pressure with the clamping band at the end of the last and yieldingly to maintain the last support in such pressure applying position, and means operative in time relation to close the clamping band to conform the upper materials to the sides of the last at said end of the last.

41. In a machine of the class described, means for clamping and supporting a last in operative position for lasting, including opposed members at the top and bottom of a last, respectively, arranged to clamp a last between them, and direct connections be-

tween said opposed members arranged to cause one of them to move whenever the other is moved to clamp the last.

42. In a machine of the class described, means for clamping and supporting a last in operative position for lasting, including opposed members at the top and bottom of a last, respectively, arranged to clamp a last between them, and operating connections between said members effective to cause the same to move invariably in opposite directions toward or from each other.

43. In a machine of the class described, means for clamping and supporting a last in operative position for lasting, including opposed members at the top and bottom of a last, respectively, arranged to clamp a last between them, means connected to one of said members to operate it, and direct connections between said members to cause the member which receives such operative movement to impart simultaneously to the other member movement in the opposite direction.

44. In a machine of the class described, means for clamping and supporting a last in operative position for lasting, including opposed members at the top and bottom of the last respectively, arranged to clamp a last between them, one of said members having last engaging means thereon arranged to yield relatively to the other member, means for operating one of said opposed members, and means directly connecting the operable member to the other of said opposed members for imparting movement to the other to cause said opposed members to move simultaneously toward or from each other upon actuation of the operating means.

45. In a machine of the class described, means for supporting and holding a last in position for lasting, including a last support and an opposed member between which the last is adapted to be clamped, said last support including a yieldable last engaging portion, operating connections between the last support and the opposed member effective to cause them to move invariably in opposite directions simultaneously, means for operating said member and support to move them in said opposite directions, and lasting means opposing movement of a last on said last support toward said opposed member when said lasting means is engaged with the marginal portion of a shoe upper over the bottom of the last.

46. In a machine of the class described, means for supporting and holding a last in lasting position, including an upwardly extending lower member to support the last from beneath, an upper member to engage the last from above, means for raising and lowering the lower member, and operating mechanism directly connecting said lower member with the upper member to cause the upper member to be moved by the lower

member, said lower member having last engaging means thereon constructed and arranged to yield downwardly when raised to permit the last to be lowered by the coincident downward movement of the upper member in engagement with the last.

47. In a machine of the class described, the combination of wiper plates, means for projecting said plates over the edge of a shoe sole on the bottom of a last, opposed members directly connected for coincident movement toward each other to clamp a last between them and to support the last in lasting position, one of said opposed members being arranged yieldingly to support the last, and means for moving the other of said opposed members in time relation to the movement of the wiper plates over the edge of the shoe sole and in a direction to permit the yielding pressure of the other of said members to be operative against said wiper plates.

48. In a machine of the class described, means for supporting and holding a last in position for lasting, including a member to support the last, a member to engage the last at its opposite side to clamp the last, means for raising and lowering one of said members, said last named member having thereon last engaging means constructed to yield relatively to the clamping member, and operating mechanism directly connecting said members to cause them to move invariably in opposite directions.

49. In a machine of the class described, means for supporting and holding a last in lasting position including a member to support the last from beneath and an upper member to engage the last from above, operating mechanism directly connecting said members to cause them to move simultaneously in opposite directions, one of said members being pivoted to permit a longitudinal movement of the last, and upper conforming means positioned to engage the end of the last.

50. In a machine of the class described, the combination of opposed members adapted to hold a last between them, operating means directly connecting said opposed members arranged simultaneously to move said members toward each other to clamp the last between them, means for effecting longitudinal movement of the last coincidently with movement of said members toward clamping relation to the last, and upper conforming means positioned to oppose such longitudinal movement of the last.

51. In a machine of the class described, the combination of opposed members arranged to hold a last between them, means for simultaneously moving said members toward each other to clamp the last between them, means for effecting a longitudinal movement of the last coincidently with

movement of said members toward clamping relation to the last, upper conforming means opposing said longitudinal movement of the last, and means operable subsequently to actuate the upper conforming means to clamp and conform the upper materials to the sides of the last.

52. In a machine of the class described, the combination of opposed members constructed and arranged to clamp a last between them, means for moving said members toward each other to clamp the last between them, means operated by such clamping movement of the members coincidently to move the last longitudinally, upper conforming means positioned to oppose such longitudinal movement of the last, and means for automatically operating the conforming means to clamp and conform the upper to the last in time relation to the longitudinal movement of the last.

53. In a machine of the class described, the combination of upper conforming means to embrace a shoe upper on its last at one end of the last, means for clamping and holding a last in lasting position, means operative to move the last longitudinally toward said conforming means, and means operative subsequently and in time relation to cause the conforming means to embrace and conform the upper materials to the side of the last at said end of the last.

54. In a machine of the class described, means for supporting and holding a last in lasting position, including opposed members relatively movable to clamp a last between them, means for moving one of said members, and means for moving and supporting the other member, including an arm extending laterally over and spaced from the sole on the last and having operating connections from the first mentioned member.

55. In a machine of the class described, in combination, means for supporting and holding a last in lasting position, including opposed members relatively movable to clamp a last between them, means for moving one of said opposed members, means for supporting and moving the other of said opposed members including a vertically movable member having operating connections from the first-mentioned member and an arm carried by the upper end of said vertically movable member and extended laterally over and spaced from the surface of the sole portion of the last.

56. In a machine of the class described, in combination, means for supporting and holding a last in lasting position, including opposed members relatively movable to clamp a last between them, means for moving one of said members, means for moving and supporting the other of said opposed members including vertically movable members located at the sides of the last, a sup-

porting arm for said other opposed member carried at the upper ends of said vertically movable members and extending laterally over and spaced from the surface of the sole portion of the last, and connections for transmitting motion to the said vertically movable members to cause simultaneous movement of the opposed members.

57. In a machine of the class described, in combination, heel lasting mechanism, means for supporting a last in lasting position, including an upwardly movable member having a spindle for supporting the heel end of the last, and means for moving said member upwardly and for simultaneously moving the spindle laterally toward the lasting mechanism, said spindle being bodily adjustable transversely of the upwardly movable member and in a direction lengthwise of the last properly to locate the heel end of the last relatively to the heel lasting mechanism.

58. In a machine of the class described, heel lasting mechanism, means for supporting a last in lasting position, including an upwardly movable last supporting member with a spindle pivotally mounted thereon and arranged to support the heel end of the last, said spindle being mounted for bodily adjustment transversely of the upwardly movable member and lengthwise of the last properly to locate the heel end of the last relatively to said lasting mechanism and being arranged to swing upon its pivot in a direction longitudinally of the last, and means operative in time relation to the upward movement of said supporting member to swing said spindle.

59. In a machine of the class described, the combination of end lasting mechanism, means for supporting a last in position for the lasting operation of said end lasting mechanism, including a vertically movable member, power driven means for operating said member, a spindle carried by said member and arranged to support that end of the last to be operated upon, and means for adjusting said spindle into and out of vertical alignment with the longitudinal axis of said vertically movable member to locate said end of the last in appropriate relation to the end lasting mechanism.

60. In a machine of the class described, in combination, end lasting means, means for supporting a last in position for lasting a shoe upper thereon including a vertically movable rod, and an upwardly extending last spindle carried by and adjustable transversely of the rod into and out of vertical alignment with the longitudinal axis of the rod and in a direction longitudinally of the supported last properly to locate the end of the last relatively to said end lasting means.

61. In a machine of the class described,

the combination of means adapted to conform a boot or shoe upper to a last at one end of the last, end wipers, and means to support a last in a position relative to said conforming means and end wipers for lasting a shoe upper on the last comprising a vertically movable standard, means for moving the standard vertically to lasting position, and an upwardly extending last supporting spindle mounted on said standard for bodily adjustment transversely of the standard and lengthwise of the last and for tilting movement to incline the last into a desired plane relative to the plane of the end wipers.

62. In a machine of the class described, means for supporting a last in lasting position, including a vertically movable rod with means for moving the rod vertically, an upwardly extending pivoted spindle, means for bodily adjusting said spindle in a direction transversely of the rod and lengthwise of the last, said spindle being adapted to turn upon its pivot, and means to adjust said spindle on its pivot in a direction longitudinally of the last supported by the spindle.

63. In a machine of the class described, means for supporting a last in lasting position including a vertically movable member, an upwardly extending pivoted spindle carried by said member, means bodily to adjust said spindle transversely of said member and in a direction lengthwise of a supported last, and means automatically operative to turn said spindle upon its pivot.

64. In a machine of the class described, means for supporting a last in lasting position including a vertically movable member and means for raising and lowering said member, a spindle pivotally attached to said member, and means operated by the raising and lowering means to turn the spindle upon its pivot.

65. In a machine of the class described, means to support a last in lasting position comprising a vertically movable member with means for raising and lowering said member, a spindle pivotally attached to said member, and means operative in time relation to the raising and lowering movements to turn said spindle upon its pivot.

66. In a machine of the class described, means to support a last in lasting position comprising a vertically movable member with means for raising and lowering said member, a spindle pivotally attached to the member, means operative in time relation to the raising and lowering movements to turn said spindle upon its pivot, and means yieldingly opposing turning movement of said spindle.

67. In a machine of the class described,

the combination of means for supporting a last in position for lasting the end of a shoe upper thereon, end wiping mechanism comprising a carrier and end lasting wipers mounted thereon for yielding movement in a direction substantially perpendicular to the plane of the last bottom; spring means arranged to oppose heavy yielding resistance to such movement of the wipers, and means for moving the carrier and wipers bodily lengthwise of a supported last in such relation to the plane of the last bottom as to cause the wipers to engage the upper on the sides of the last below the plane of a sole on the last bottom and for continuing said bodily movement to cause said wipers to be forced by the shoe materials to climb up over the edge of the tread face of the shoe sole against said heavy yielding resistance.

68. In a machine of the class described, the combination of means for supporting a last in position for lasting the end of a shoe upper thereon, means to embrace and conform the upper to the sides of the last at said end, end wiping mechanism comprising end embracing wipers and a carrier for the wipers bodily movable lengthwise of a supported last toward and from the end of the last and on which said wipers are mounted for yielding movement substantially perpendicularly to the plane of the last bottom, spring means arranged to oppose heavy yielding resistance to such movement of the wipers, and means for coincidentally closing the wipers and bodily moving the carrier and wipers lengthwise of and toward the last in such relation to the plane of the last bottom as to cause the wipers to embrace the sides of the last end below the plane of a sole on the last bottom and for continuing said bodily movement to cause the wipers to be forced by the shoe materials to climb up over the edge of the tread face of the shoe sole against said yielding resistance.

69. In a machine of the class described, the combination of means for supporting a last in position for lasting the end of a shoe upper thereon, end wiping mechanism comprising end lasting wipers and a carrier for said wipers bodily movable lengthwise of and toward the end of a supported last, operating means for projecting said carrier and wipers bodily lengthwise of the shoe in such relation to the plane of the last bottom as to cause the wipers to engage the upper on the sides of the last below the plane of a sole on the last bottom, and connections between said operating means and carrier constructed and arranged to permit the wipers bodily to be forced by the shoe materials up over the edge of the tread face of the shoe sole against yielding resistance

upon continued projecting movement of said operating means and carrier.

70. In a machine of the class described, in combination, a last and shoe support, an end embracing band, an end lasting wiper, a wiper carrier, and operating means for said carrier organized bodily to move the carrier and wiper lengthwise of a supported last in such a plane as to cause the wiper to engage the upper on the last below the plane of the shoe sole and to continue said bodily movement to cause said wiper to climb up to and advance over the margin of the tread face of said sole, said operating means having a connection with said carrier constructed and arranged to permit said carrier to move upwardly with the climbing wiper against relatively strong yielding resistance.

71. In a machine of the class described, the combination of a last and shoe support, an end embracing band arranged to engage the sides of a shoe upper below the plane of its sole, end embracing wipers, a wiper carrier, operating means for said carrier organized bodily to move the carrier and wipers lengthwise of and toward the end of a supported last with a component of movement substantially perpendicular to the plane of the last bottom to bring the wipers into contact with the upper below the plane of the shoe sole and to continue bodily lengthwise movement of the wipers, and means yieldingly opposing upward movement of the wipers over the edge of the shoe sole as said wipers continue to move lengthwise of the last.

72. In a machine of the class described, the combination of a last support, end wipers for wiping the upstanding marginal portion of a shoe upper on a supported last down over the edge of a shoe sole on the bottom of the last, means to project the wipers over the bottom of the last at one end and to retract the wipers, and means operative to cause downward pressure against the wipers and coincident upward pressure of the edges of the shoe upper against the wipers during projection of the wipers and operative to relieve pressure against the wipers during each retracting movement of the wipers.

73. In a machine of the class described, the combination of a last support, end wipers for wiping the marginal portion of a shoe upper on a supported last down over the edge of a shoe sole on the bottom of the last, mechanism automatically to project the end wipers a plurality of times over the bottom of the last at one end and to retract the wipers after each projection, and means constructed and arranged automatically to cause downward compacting pressure against the wipers and coincident

upward pressure of the edges of the shoe upper against the wipers in timed relation to and during each projection of the wipers and automatically to relieve pressure against the wipers during each retracting movement of the wipers.

74. In a machine of the class described, the combination of a last support, end wipers for wiping the marginal portion of a shoe upper on a supported last down over the edge of a shoe sole on the bottom of the last, means automatically to project the wipers a plurality of times over the bottom of the last at one end and to retract the wipers after each projection, and means operative to cause yielding downward pressure against the wipers and coincident yielding upward pressure of the edges of the shoe upper against the wipers during each projection of the wipers and operative in time relation to relieve pressure against the wipers during each retracting movement of the wipers.

75. In a machine of the class described, the combination of a last support, end wipers for wiping the upstanding marginal portion of a shoe upper on a supported last down over the edge of a shoe sole on the bottom of the last, mechanism operative automatically to project the wipers a plurality of times over the bottom of the last at one end and to retract the wipers after each projection, and means operative in time relation to cause downward pressure against the wipers and coincident upward pressure by the last support against the wipers during each projection of the wipers over the last bottom and operative in time relation to relieve the upward pressure of the last support during each retracting movement of the wipers.

76. In a machine of the class described, the combination of a last support, end wipers for wiping the upstanding marginal portion of a shoe upper on a supported last down over the edge of a shoe sole on the bottom of the last, mechanism operative automatically to project the wipers a plurality of times over the bottom of the last at one end and to retract the wipers after each projection, and means operative in time relation to cause downward yielding pressure against the wipers and coincident upward yielding pressure of the last support to press the upper yieldingly against the wipers during each projection of the wipers over the last bottom and operative in time relation to relieve the upward pressure of the last support during each retracting movement of the wipers.

77. In a machine of the class described, the combination of end wipers, last and shoe supporting means movable to position a last and shoe upper in cooperative relation to the wipers with the bottom of a sole on

the last above the plane of the wipers, mechanism automatically operative to advance the wipers to engage the upper and relatively to move the wipers and last vertically to upwipe and conform the upper and subsequently to advance and retract the wipers over the shoe sole a plurality of times without backing the wipers off the sole between the first advance and last retraction of the wipers, and means operative to exert upper compacting pressure against the wipers perpendicularly to the plane of the sole during each advancing movement of the wipers and operative to relieve said pressure during each retracting movement of the wipers.

78. In a machine of the class described, the combination of end wipers, last and shoe supporting means movable to position a last and shoe upper in cooperative relation to the wipers with the bottom of a sole on the last above the plane of the wipers, mechanism automatically operative to advance the wipers to engage the upper and relatively to move the wipers and last vertically to upwipe and conform the upper and subsequently to advance and retract the wipers over the sole a plurality of times without backing the wipers off the sole between the first advance and last retraction of the wipers, and means operative to exert yielding downward compacting pressure on the wipers and yielding upward compacting pressure of the edges of the shoe upper against the wipers during each advancing movement of the wipers and operative to relieve the compacting pressure during each retracting movement of the wipers.

79. In a machine of the class described, the combination of end wipers, last and shoe supporting means movable to position a last and shoe upper in cooperative relation to the wipers with the bottom of a sole on the last above the plane of the active face of the wipers, mechanism automatically operative to advance the wipers to engage the upper and relatively to move the wipers and last vertically to upwipe and conform the upper and subsequently to advance and retract the wipers over the sole a plurality of times without backing the wipers off the sole between the first advance and last retraction of the wipers, an end clamping member constructed and operative in time relation to embrace and conform the shoe upper at the end of the last to the side of the last adjacent to the bottom of the last during the period of the plurality of wiping actions, and means operative to exert upper compacting pressure against the wipers perpendicularly to the plane of the sole during each advancing movement of the wipers and operative to relieve said pressure during each retracting movement of the wipers.

80. In a machine of the class described,

the combination of end-embracing wipers, last supporting means movable to position a supported last with its shoe upper in co-operative relation to the wipers and with the sole on the last bottom above the plane of the active face of the wipers, and means organized bodily to advance the wipers lengthwise of the last into contact with the shoe upper below the plane of the shoe sole and to continue said advance to cause said wipers to climb up the side over the last to the plane of the sole and to advance over the margin of the sole with downward compacting pressure, said means including a wiper carrier constructed to yield upwardly with the wipers through pressure of the edge of the upper and sole against the edge face of the wipers as the carrier and wipers continue to advance.

81. In a machine of the class described, the combination of end-embracing wipers, last supporting means movable to position a supported last with its shoe upper in co-operative relation to the wipers and with the sole on the last bottom above the plane of the active face of the wipers, and mechanism automatically operative to advance the wipers into contact with the side of the shoe upper below the plane of the shoe sole and to continue to advance the wipers after they have engaged the shoe, said mechanism including wiper-carrying means mounted for bodily forward movement with the wipers to advance the wipers and constructed to yield upwardly with the wipers against spring pressure in response to pressure of the upper and sole against the edge face of the wipers as they continue their advance to tension the wipers downwardly against the edge of the upper and sole.

82. In a machine of the class described, the combination of pivoted end wipers, last supporting means movable to position a supported last with its shoe upper in co-operative relation to the wipers and with the sole on the bottom of the last above the plane of the active face of the wipers, and power operated mechanism automatically operative to close the wipers against the side of the upper below the plane of the sole and to cause the wipers to climb up over the edge of the sole and in time relation bodily to reciprocate the wipers over the sole and coincidentally to swing the wipers inwardly and outwardly, said mechanism including wiper-carrying means mounted for bodily forward movement and arranged for upwardly yielding movement with the wipers in response to pressure of the upper and sole against the edge face of the wipers and having yielding connections in the wiper reciprocating and swinging means.

83. In a machine of the class described, the combination of a movable wiper head, carrying members mounted for rotative

movement upon said head, wiper plates carried by and movable with said members and having formed wiping edges to embrace the end of a shoe upon a last, racks and pinions to impart rotative movement to said carrying members, said racks being yieldingly held against longitudinal movement, and means for reciprocating the wiper head bodily to move the wiper plates forwardly and backwardly and to impart opening and closing movements to the plates through said racks.

84. A machine of the class described having in combination, a movable wiper head carrying members mounted for rotative movement upon said head, wiper plates having formed wiping edges to embrace the end of a shoe upon a last, racks and pinions to impart rotative movement to said carrying members, said racks being yieldingly and adjustably held against longitudinal movement relatively to the wiper head, and means for reciprocating the head bodily to move the wiper plates forwardly and backwardly and to impart opening and closing movements to the wiper plates through said racks.

85. A machine of the class described, having in combination, a movable wiper head, a stationary support for said head, carrying members mounted upon said head for swinging movement thereon, end embracing wiper plates mounted on said carrying members to turn therewith, a rack and pinion for operating each carrying member, said racks being adjustably connected to said stationary support with means to permit said racks to move lengthwise with said wiper head when substantial resistance is offered to the closing of said wiper plates as the head is moved forwardly, and means for moving said head toward and from the end of a last.

86. In a machine of the class described in combination, a flexible last and shoe upper embracing member, and means for supporting and operating said embracing member including a series of pressure members extending longitudinally of the flexible member, a common carrier for said pressure members, means for bodily moving said carrier toward the side of an embraced last, and means independently to adjust the pressure members toward and from the last to conform the flexible member to the side of the last and shoe lengthwise of the last.

87. In a machine of the class described, the combination of a last and shoe support, a flexible last and shoe upper embracing member, and means for supporting and operating said member including a carrier member, means arranged to move said carrier member toward a last to force the flexible member into last conforming contact with an upper at the side of the last, and a series of pressure members positioned upon

the carrier member and adjustable relatively to the carrier member toward and from the last.

88. In a machine of the class described, the combination with a flexible member for embracing the sides of a shoe upper at the end of its last, carrier members to which the flexible member is connected for closing said member upon the upper at the end of the last, and a series of pressure members supported by each carrier member and attached to the flexible member, the pressure members of each series being independently adjustable relatively to their carrier member to adjust the flexible member independently of the movements of said carrier members.

89. An end lasting mechanism having, in combination, a last support, a heel embracing band independently of movement of the last support, means for closing the band, a pressure member at each end of the band formed to apply pressure to the upper and lower parts of the band and mounted to turn about a horizontal pivot and screws adjustable to vary the pressure applied through said members.

90. An end lasting mechanism having, in combination, means to support a last and shoe upper in position for lasting one end thereof, cooperating pivoted end wiper plates arranged to wipe a shoe upper over the end of its last, and means for closing said plates over the bottom of a supported last including independently closing connections for said plates constructed and arranged to permit simultaneous swinging movement of said plates in the same direction about the end of a last automatically to adjust said wipers relatively to the median line of said end of the last.

91. An end lasting mechanism having, in combination, means to support a last with a shoe upper thereon in position for lasting one end thereof, pivoted end wipers, and power operated means for closing said wipers over the bottom of a supported last including independent connections constructed and arranged to permit said wipers automatically to swing about the end of the supported last simultaneously and in the same direction to adjust the wipers relatively to the median line of said end.

92. An end lasting mechanism having, in combination, means to support a last with a shoe upper thereon in position for lasting one end thereof, pivoted end wipers, and means to close said wipers over the end of a supported last including independent yielding operating connections to said wipers arranged to permit swinging of said wipers simultaneously about the end of the last in the same direction to adjust them relatively to the median line of said end of the

last, responsively to greater resistance offered to closing over of the wipers at one side of the last than at the other.

93. An end lasting mechanism, having, in combination, means to support a last and shoe upper in position for lasting an end thereof, pivoted end wipers, carriers for said wipers, and means to operate said carriers to close said wipers over the end of a supported last, said means including independent operating connections to each of said carriers constructed and arranged to permit pressure against a wiper carrier at one side of an improperly positioned last end automatically to swing said carrier about said last end in the same direction as the other carrier to adjust the wipers relatively to the median line of said end.

94. An end lasting mechanism having, in combination, means to support a last and shoe upper in position for lasting one end thereof, pivoted end wipers, carriers for said wipers mounted for swinging movement to close and open said wipers, and means to operate said carriers to close said wipers over the bottom of the last, said operating means including independent yielding wiper closing connections for each carrier arranged to permit unequal pressures against the closing wipers at the sides of an improperly positioned last automatically to swing the carrier at one side of the last rearwardly and in the same direction as the closing carrier at the opposite side of the last to adjust their wipers relatively to the median line of said end of the last.

95. In a heel seat lasting machine, the combination with seat lasting wipers, of work supporting means comprising a vertical slide, operating means connected with the slide for moving it up and down, a work supporting rod movable endwise in the slide, and a stiff spring resting at its lower end against the slide and at its upper end engaging a collar on the work supporting rod.

96. In a heel seat lasting machine, the combination with seat lasting wipers, of work supporting means comprising a vertical slide, operating means connected with the slide for moving it up and down, a work supporting rod movable endwise in the slide, a stiff spring resting at its lower end against the slide and at its upper end engaging a collar on the work supporting rod, and operating means for the wipers and said slide organized to move said parts in time relation.

97. In a heel seat lasting machine, the combination with heel seat lasting wipers, of shoe supporting means comprising a rod guided for vertical movement toward and from the wipers in approximately the vertical axis of the last hole, power driven means for operating said wipers and rod, and a last spindle mounted on said rod for

right line adjustment thereon longitudinally of the last to position the heel end of a last in proper relation to the heel wipers.

98. In a heel seat lasting machine, the combination with heel seat lasting wipers, of shoe supporting means comprising a rod guided for vertical movement toward and from the wipers in approximately the vertical axis of the last hole, and a last spindle mounted on said rod for right line adjustment thereon longitudinally of the last to position the heel end of a last in proper relation to the heel wipers, said last spindle comprising a supporting member and a last pin mounted thereon to yield against the pressure of the last.

99. In a heel seat lasting machine, the combination with heel seat lasting wipers, of last supporting means comprising a rod guided for vertical movement in a fixed path, and a last spindle mounted on the head of the rod and having a forwardly and backwardly tipping and downwardly yielding last pin, combined with means for adjusting the spindle forwardly and backwardly on the rod to shift the last pin pivot forwardly or backwardly with relation to the line of vertical pressure exerted on the heel seat by the heel seat wipers.

100. In a heel seat lasting machine, the combination with seat lasting wipers, of shoe supporting means movable to apply pressure between the last and the wipers, said supporting means including a pivotally mounted last pin, and adjusting means for causing the last pin to tip backwardly in response to such pressure.

101. In a heel seat lasting machine, the combination with seat lasting wipers and a heel embracing band, of work supporting means including a vertically movable rod, a last pin mounted on the rod for forward and backward tipping movement, and means for adjusting the last pin forwardly and backwardly with relation to the rod to locate the pivotal support for the last pin so that the pin will automatically tip backwardly in the holes of lasts of different sizes or having differently located pin holes in response to vertical pressure of the last against the wipers.

102. In a heel seat lasting machine, the combination with seat lasting wipers and a heel embracing band, of vertically movable work supporting means including a last pin pivoted to swing forwardly and backwardly, a device for holding the last pin against forward swinging movement, and means operative automatically to disengage said device when the work support is depressed and to engage the device and cause it to hold the last pin against forward movement when the work support is upraised.

103. In a heel seat lasting machine, the combination with seat lasting wipers and a heel embracing band, of vertically movable

work supporting means including a last pin mounted to tip forwardly and backwardly, means for elevating and depressing the work support; and means operating automatically to tip the last pin backwardly and force the last into the heel band when the support is elevated and to free the last pin for forward tipping movement when the work support is depressed to facilitate the removal and application of the work.

104. In a heel seat lasting machine, the combination with seat lasting wipers and a heel embracing band, of vertically movable work supporting means including a last pin pivoted to swing forwardly and backwardly, said pin having a ratchet arm rigid with its pivot, backwardly faced ratchet teeth on said arm, a pawl yieldingly pressed toward said ratchet teeth to hold the last pin in its backwardly tipped position, and means for automatically disengaging the pawl and holding it out of engagement with the ratchet teeth when the work support occupies its depressed position.

105. In a heel seat lasting machine, the combination with seat lasting wipers and a heel embracing band, of vertically movable work supporting means including a last pin pivoted to swing forwardly and backwardly, a ratchet arm rigid with the last pin pivot, a swinging pawl carrier on the last pin pivot, a pawl on the carrier, and operating means organized to depress the work support for removal and application of the work and simultaneously to disengage the pawl from the ratchet to permit the last pin to be tipped forwardly and thereafter to elevate the work support and free the pawl to engage the ratchet for holding the last pin in the backwardly tipped position to which the workman moves it, and subsequently to swing the pawl carrier in the direction for forcibly tipping the last pin farther backwardly and thrusting the last into the heel band.

106. In a heel seat lasting machine, the combination with seat lasting wipers and a heel embracing band, of vertically movable work supporting means including a last pin pivoted to swing forwardly and backwardly, and operating means permitting the last pin to be tipped forwardly and backwardly for application and removal of the shoe and organized to effect an upward movement of the work support preparatory to the seat lasting operation and a forcible backward tipping of the last pin for pressing the last hard back into the heel band.

107. In a heel seat lasting machine, the combination with seat lasting wipers, the plane of operation of which is predetermined within limits, of a hold down arranged to engage the heel seat of the shoe, a last pin, and operating mechanism yieldingly connected with the last pin and

yieldingly connected with the hold down and organized to move the hold down and the last pin each toward the other from shoe receiving positions and present the heel seat
5 faces of different sized shoes in predetermined relation to the plane of operation of the wipers.

108. In a heel seat lasting machine, the combination with seat lasting wipers, of a
10 hold down, a last pin, a single slide yieldingly connected to the last pin for elevating the last pin and unyieldingly connected to the hold down and means for imparting a predetermined movement to the slide for
15 causing the hold down to determine the plane of the heel seat invariably while the last pin yieldingly clamps the shoe against the hold down.

109. In a heel seat lasting machine, the combination with seat lasting wipers, of a
20 vertically movable last pin, a slide in which the last pin is yieldingly mounted, bars mounted for vertical sliding movement at opposite sides of the machine and connected
25 at their upper ends by a cross head, a hold down mounted on the cross head to engage the shoe substantially over the last pin, lever connections between the slide and the bars arranged to force the hold down down-
30 wardly simultaneously with the elevation of the last pin, and means for imparting a predetermined movement to the slide in time relation to the operative movement of the seat lasting wipers.

110. In a heel seat lasting machine, the combination with seat lasting wipers, of shoe positioning mechanism comprising a
35 last pin and a hold down, and operating mechanism for advancing and retracting the wipers and for causing the shoe positioning
40 mechanism to clamp the work and to impart to the work predetermined down and up movements with relation to the wipers in time relation to the closing and opening
45 movements of the wipers with the plane of the heel seat presented initially above the plane of the wipers.

111. In a heel seat lasting machine, the combination with seat lasting wipers, of shoe positioning mechanism comprising a
50 last pin and a hold down, and operating mechanism for closing and opening the wipers and for causing the shoe positioning mechanism to clamp the shoe and hold
55 it with the plane of the heel seat in a predetermined relation to the plane of the wipers during an initial portion of the movement of the wipers over the heel seat and then while the wipers are positioned over
60 the heel seat to elevate the plane of the heel seat for the operation of the wipers during a subsequent portion of their movement.

112. In a heel seat lasting machine, the combination with seat lasting wipers, of

shoe positioning mechanism including an unyielding hold down and a yielding last pin, and operating mechanism for reciprocating the wipers and for relatively moving the hold down and last pin to clamp the
70 work and present it with the plane of the heel seat in a predetermined position during an initial portion of the movement of the wipers over the heel seat and then to raise the hold down and increase the upward pres-
75 sure of the shoe against the wipers during the completion of the advance of the wipers over the heel seat.

113. In a heel seat lasting machine, the combination with seat lasting wipers, of shoe positioning mechanism comprising a
80 single vertically movable power operated slide, a last pin yieldingly connected with the slide, a hold down, and connections between the slide and the hold down by which the hold down is forced downwardly as the
85 slide and last pin are elevated.

114. In a heel seat lasting machine, the combination with seat lasting wipers, of embracing means comprising a bracket and
90 arms pivotally connected together and to the bracket at the rear end of the heel seat and having pressure members formed thereon to press upon the work at opposite corners of the heel for clamping the upper materials against the last at the corners of
95 the heel, and means for swinging said arms about their pivots to effect clamping of the work.

115. In a heel seat lasting machine, the combination with seat lasting wipers, of
100 embracing means comprising a bracket and arms pivotally connected together and to the bracket and each carrying a plurality of relatively yielding pressure members arranged
105 to press upon the work at the sides of the heel for clamping the upper materials to the side faces of the last, and means for swinging the arms about their pivot to effect the clamping of the work in time relation
110 with the operation of the seat lasting wipers.

116. In a heel seat lasting machine, the combination with seat lasting wipers, of embracing means comprising a bracket and
115 arms pivotally connected together and to the bracket and each carrying a plurality of relatively yielding pressure members arranged to press upon the work at the sides of the heel for clamping the upper materials to the side
120 faces of the last, and independently yielding means for engaging the respective arms and swinging them about their pivots for effecting clamping pressure of the pressure members against the opposite sides of the
125 heel.

117. In a heel seat lasting machine, the combination with seat lasting wipers, of embracing means comprising a bracket and
130 arms pivotally connected together and to the bracket and each carrying a plurality of rel-

atively yielding pressure members arranged to press upon the work at the sides of the heel for clamping the upper materials to the side faces of the last, and power operated means for swinging the arms about their pivot and imparting to said pressure members combined inward and forward movement, said members being free to yield outwardly in the arms but compelled to move forwardly with the arms whereby to effect a forward tension of the engaged upper materials as the arms close and the pressure members yield outwardly in the arms.

118. In a heel seat lasting machine, the combination with seat lasting wipers, of means for clamping the upper materials against the side faces of the heel portion of the last, including a pressure applying member mounted to turn about a horizontal pivot and yieldingly held in position to apply clamping pressure first adjacent to the heel seat face of the shoe and then to turn and spread the area of clamping pressure downwardly along the side of the last.

119. In a heel seat lasting machine, the combination with seat lasting wipers, of a heel embracing band, swinging carriers to which the front end portions of the band are connected, and means yieldingly connecting the rear middle portion of the band with its carriers and allowing said middle rear portion of the band to spring away from its carriers as the band is opened.

120. In a power heel seat lasting machine, the combination with means for supporting a shoe in position to be operated upon, of seat lasting wipers, a wiper carrying head bodily movable lengthwise of the last, a cam, a lever, a link extending from the lever through a portion of the head, and a spring interposed between the head and a portion of the link for yieldingly transmitting the cam motion to the wiper carrying head.

121. In a power heel seat lasting machine, the combination with means for supporting a shoe in position to be operated upon, of seat lasting wipers, a wiper carrying head bodily movable lengthwise of the last, a cam, a lever, a link, a pivot pin connecting the lever and link and having a pin and slot connection with the wiper carrying head, and a spring arranged between the wiper carrying head and a portion of the link to transmit the cam motion yieldingly to the wiper carrying head and allow compression as the wiper encounters resistance and the pivot pin moves in its slot connection with the head.

122. In a power heel seat lasting machine, the combination with means for supporting a shoe in position to be operated upon, of seat lasting wipers, a wiper carrying head arranged for bodily movement forwardly and backwardly, a cam, a lever extending from the cam and having a pivotal connection

with the rear end of the wiper carrying head, a link connection between the forward portion of the wiper carrying head and a fixed portion of the machine, and a spring associated with said link connection to permit the wiper carrying head to move vertically for allowing the wipers to climb over the edge of the shoe as they are advanced.

123. In a power heel seat lasting machine, the combination with end embracing wipers and means for supporting a shoe in position to be operated on, of means operating in time relation to clamp the shoe and to advance the wipers lengthwise of the shoe to engage the shoe below the plane of its sole, said wipers being mounted with capacity for limited upward movement against yielding resistance to climb up to the plane of the sole as they continue said advancing movement after thus engaging the shoe.

124. In a power heel seat lasting machine, the combination with end embracing wipers, of shoe supporting means, and power operating mechanism organized to position the shoe automatically with the plane of the heel seat elevated to a predetermined extent above the plane of the lower face of the wipers and to advance the wipers to embrace the heel below the plane of the heel seat and by continued advancing movement to climb upwardly against yielding resistance over the edge of and on to the heel seat and gather the upper inwardly over the heel seat.

125. In a power heel seat lasting machine, the combination with end embracing wipers, of shoe supporting means, and power operating mechanism organized to position the shoe automatically with the plane of the heel seat elevated to a predetermined extent above the plane of the lower face of the wipers and to advance the wipers lengthwise of the shoe to cause them to embrace the heel slightly below the plane of the heel seat and to continue said lengthwise advance of the wipers to cause them to climb up over the edge of the heel seat against yielding resistance frictionally pulling the upper to form it to the edge of the heel seat and press it upon the margin of the heel seat.

126. In a power heel seat lasting machine, the combination with heel embracing wipers, of an unyielding hold down and a yielding last pin for positioning a shoe with the plane of its heel seat slightly above the plane of the lower face of the wipers, wiper controlling means permitting a limited vertical displacement of the wipers against yielding resistance, means for advancing the wipers and causing them to climb over the edge of the heel seat, and means for raising the hold down to allow the yielding last pin to raise the shoe and take up the vertical yield of the wipers, whereby the completion of the advance of the wipers is effected with

the wipers held rigidly against upward displacement.

127. In a power heel seat lasting machine, the combination with heel embracing wipers, and shoe positioning means, of controlling and operating mechanism for said wipers and positioning means organized to cause relative lengthwise movement of the shoe and the wipers, to cause the wipers to embrace the shoe slightly below the plane of the heel seat and to continue said relative lengthwise movement to cause the wipers to climb up over the edge of the heel seat against yielding resistance and then to advance to complete the wiping action with a vertically unyielding wiping movement.

128. In a power heel seat lasting machine, the combination with seat lasting wipers and means for supporting a shoe in position to be operated upon by said wipers, of controlling and operating mechanism for said wipers organized yieldingly to move the wipers bodily lengthwise of the shoe and to close them against the upper below the plane of the heel seat and to continue said lengthwise advance to cause them to climb up and advance inwardly over the heel seat, said mechanism including means arranged to permit said wipers to yield upwardly in response to advancing pressure of the wipers against the upper and last to permit the wipers to climb up over the edge of the heel seat as they are moved lengthwise of the shoe.

129. In a power heel seat lasting machine, the combination with seat lasting wipers and means for supporting a shoe in position to be operated upon by said wipers, of wiper-carrying means bodily movable toward and lengthwise of the last, and controlling and operating mechanism for said wipers and carrying means organized yieldingly to move said carrying means lengthwise of the shoe, first, to engage the wipers with the upper below the plane of the heel seat and then, by continued lengthwise movement, to cause the wipers to climb up over the edge of the heel seat and to advance inwardly, said mechanism including means to permit yielding upward movement of the carrying means responsive to advancing pressure of the wipers against the upper to permit the wipers to climb up over the edge of the heel seat.

130. In a machine of the class described, the combination with a shoe end embracing band, of means for applying pressure to said band to force it against a shoe, said pressure applying means being mounted to swing in response to resistance of the shoe about an axis extending in substantially parallel relation to the plane of the shoe bottom to permit the band to conform to the contour of the shoe, and spring means for determining a normal position of said pres-

sure applying means with respect to movement about said axis.

131. In a machine of the class described, the combination with a shoe end embracing band, of members arranged to apply pressure to said band at opposite sides of a shoe to force the band against the shoe, said members being mounted to swing in response to resistance of the shoe about axes extending lengthwise of the shoe to permit the band to conform to the contour of the shoe, and spring means for determining a normal position of said members with respect to movement about said axes.

132. In a machine of the class described, the combination with a shoe end embracing band, of members for applying pressure to said band at opposite sides of a shoe, said members being mounted to swing in response to resistance of the shoe about axes extending lengthwise of the shoe, and spring means for positioning said members in such relation to the shoe as to cause the band to apply its pressure initially adjacent to the plane of the shoe bottom while permitting the band to be closed inward subsequently against other portions of the lateral surface of the shoe.

133. In a machine of the class described, the combination with a shoe end embracing band, of yielding means tending to position said band for engagement with the lateral periphery of a shoe initially adjacent to the edge of the shoe bottom while permitting the band subsequently to be forced inward into conforming relation to other portions of the lateral periphery of the shoe.

134. In a machine of the class described, shoe clamping means arranged to press upon the lateral periphery of a shoe and comprising a member mounted to tip in response to resistance of the shoe about an axis extending in substantially parallel relation to the plane of the shoe bottom to conform to the heightwise contour of the shoe, spring means arranged to oppose yielding resistance to tipping movement of said member, and an adjustable stop cooperating with said spring means to determine different normal positions of the member.

135. In a machine of the class described, shoe clamping means arranged to press upon the lateral periphery of a shoe and comprising a flexible end embracing band, a band supporting member mounted to tip vertically of the shoe and also to yield bodily relatively to the shoe, and spring means tending to resist said tipping and bodily yielding movements of the member.

136. In a machine of the class described, shoe clamping means comprising a flexible end embracing band, a band supporting member for supplying pressure on the lateral periphery of a shoe, said member being mounted to yield bodily in a direction trans-

verse to the surface on which said pressure is applied and also to swing about an axis extending longitudinally of said surface, and spring means, tending to resist said bodily yielding and swinging movements of the member.

137. In a machine of the class described, the combination with a shoe end embracing band, of pressure applying means movable laterally of the shoe to press said band inwardly against the shoe from the front end of the band rearwardly, and means movable lengthwise of the shoe in wedging engagement with said pressure applying means for applying said pressure.

138. In a machine of the class described, shoe clamping means comprising members mounted for movement laterally of a shoe and having wedge surfaces inclined to the lengthwise dimension of the shoe and directed outwardly and forwardly at the respective sides of the shoe, and means movable lengthwise of the shoe in engagement with said surfaces to force said members inwardly toward the shoe.

139. In a machine of the class described, shoe clamping means comprising members each mounted to swing laterally of the shoe about an axis at the end of the shoe and having a wedge surface inclined to the lengthwise dimension of the shoe, and means movable lengthwise of the shoe in engagement with said wedge surfaces for swinging said members inwardly toward the shoe.

140. In a machine of the class described, shoe clamping means comprising members mounted for movement laterally of a shoe into clamping relation to the shoe, thrust members movable lengthwise of the shoe for operating said clamping members, and mechanism comprising independently adjustable spring connections to the respective thrust members for operating said members.

141. In a machine of the class described, shoe clamping means comprising members mounted for movement laterally of a shoe into clamping relation to the shoe, thrust members movable lengthwise of the shoe for operating said clamping members, and a cross bar connected to said thrust members for operating them, the connections between said cross bar and thrust members comprising springs separately adjustable for varying the relative clamping pressures at the opposite sides of the shoe.

142. In a machine of the class described, the combination with end lasting means, of shoe positioning means movable in a direction transverse to the plane of the shoe bottom to position the shoe for the lasting operation, said shoe positioning means being movable also in a direction lengthwise of the shoe, and mechanism controlled by said first named movement of the positioning

means for holding said means against movement in a direction lengthwise of the shoe.

143. In a machine of the class described, the combination with end lasting means, of shoe positioning means movable in a direction transverse to the plane of the shoe bottom to position the shoe for the lasting operation, said shoe positioning means including a last supporting spindle mounted to tip in a direction lengthwise of the shoe, and mechanism controlled by the movement of said shoe positioning means for holding said spindle against tipping movement.

144. In a machine of the class described, the combination with heel seat lasting means, of a heel end abutment, shoe positioning means movable in a direction transverse to the plane of the shoe bottom to position the shoe relatively to the lasting means, said shoe positioning means being movable also backwardly to thrust the heel end of the shoe against said abutment, and mechanism controlled by said first named movement of the shoe positioning means for holding said means against forward movement.

145. In a machine of the class described, the combination with end lasting means, of shoe positioning means, mechanism for moving said shoe positioning means in a direction transverse to the plane of the shoe bottom to position the shoe for the lasting operation, mechanism for imparting to said shoe also a lengthwise positioning movement comprising parts normally disconnected from each other, and means controlled by said first named movement of the shoe positioning means for connecting said parts to render said mechanism operative.

146. In a machine of the class described, the combination with end lasting means, of shoe positioning means, mechanism for moving said shoe positioning means in a direction transverse to the plane of the shoe bottom to position the shoe relatively to the lasting means, said shoe positioning means including a last supporting spindle mounted for tipping movement in directions lengthwise of the shoe, and pawl and ratchet mechanism connected to said spindle for tipping it in time relation to said first named movement of the shoe positioning means.

147. In a machine of the class described, the combination with end lasting means, of shoe positioning means, mechanism for moving said shoe positioning means in a direction transverse to the plane of the shoe bottom to position the shoe relatively to the lasting means, said shoe positioning means including a last supporting spindle mounted for tipping movement in directions lengthwise of the shoe, and mechanism controlled by said first named movement of the shoe positioning means for tipping said spindle

in one direction and for holding it against reverse tipping movement.

148. In a machine of the class described, the combination with heel seat lasting means, of a heel end abutment, shoe positioning means comprising a shoe support mounted to tip in directions lengthwise of the shoe, and power operated means comprising a ratchet and a pawl mounted to swing about the axis of said support for tipping the shoe against said abutment.

149. In a machine of the class described, the combination with end lasting means, of a shoe end abutment, and shoe positioning means comprising a shoe support mounted to tip in a direction lengthwise of the shoe to position the end of the shoe against said abutment, and normally free for tipping movement in response to pressure of the operator's hand upon the shoe, said shoe support being adjustable bodily in directions lengthwise of the shoe to determine the extent of tipping movement of the shoe and the consequent angular relation of the plane of the shoe bottom to the lasting means.

150. In a machine of the class described, the combination with shoe positioning means, of a member for laying the margin of the upper inwardly over the shoe bottom, operating means mounted for movement inwardly toward the edge of the shoe bottom to force said member over the shoe bottom, means constructed and arranged to permit a relative yield between said member and operating means in the direction of said inward movement, said member being mounted also for movement in a direction transverse to the plane of the shoe bottom in response to resistance of the shoe materials, and independent yielding means for controlling said last named movement of the member.

151. In a machine of the class described, the combination with shoe positioning means, of a wiper for laying the margin of the upper inwardly over the shoe bottom, operating means connected to said wiper and mounted for movement toward the lateral periphery of the shoe to force the wiper inwardly, the connection between said operating means and the wiper comprising a spring arranged to transmit movement to the wiper and to yield in response to resistance to inward movement of the wiper, said wiper being mounted also for movement in a direction transverse to the plane of the shoe bottom in response to resistance of the shoe materials, and a second spring for controlling said last named movement of the wiper.

152. In a machine of the class described, the combination with shoe positioning means, of a wiper mounted for movement inwardly over the margin of the shoe bottom and also for movement upwardly from

said margin, wiper operating means mounted for movement toward the lateral periphery of the shoe, and independent yielding means between said wiper and operating means for controlling said different movements of the wiper.

153. In a machine of the class described, the combination with shoe positioning means, of a wiper mounted for movement inwardly over the shoe bottom and also to tip in directions transverse to the plane of the shoe bottom, wiper operating means mounted for movement toward the edge of the shoe bottom, spring means between said operating means and the wiper and through which said inward movement is imparted to the wiper, and other spring means tending to tip the wiper in a direction to press the shoe materials upon the margin of the shoe bottom while permitting the wiper to yield in response to resistance of said materials.

154. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers mounted for movement lengthwise of the shoe and also for yielding movement in a direction transverse to the plane of the shoe bottom, spring means through which said lengthwise movement is imparted to the wipers yieldingly, and other spring means for controlling said transverse yield of the wipers.

155. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, operating means for moving said wipers lengthwise of the shoe, said wipers being mounted on said operating means to swing bodily and relatively to said means in a direction transverse to the plane of the shoe bottom about an axis located beyond the end of the shoe, and means tending to swing the wipers in a direction to cause them to press the upper materials upon the shoe bottom while permitting them to yield in response to resistance of said materials.

156. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, operating means for moving said wipers lengthwise of the shoe, said wipers being pivotally connected to said operating means to swing bodily about an axis extending laterally of the shoe beyond the end of the shoe and extending also in substantially parallel relation to the plane of the shoe bottom, and spring means tending to swing said wipers in a direction to cause them to press the upper materials upon the shoe bottom while permitting them to yield in response to resistance of said materials.

157. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, and operating means comprising substantially par-

allel arms arranged to move said wipers lengthwise of the shoe while tending to maintain them in substantially uniform angular relation to the plane of the shoe bottom, said wipers being mounted to yield bodily away from the plane of the shoe bottom in response to resistance of the shoe materials during their operative movement.

158. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, operating means comprising substantially parallel arms arranged to move said wipers lengthwise of the shoe while tending to maintain them in substantially uniform angular relation to the plane of the shoe bottom, said wipers being pivotally mounted to permit them to swing bodily in response to resistance of the shoe materials during their operative movement about an axis located beyond the end of the shoe and extending in substantially parallel relation to the plane of the shoe bottom, and spring means tending to resist said swinging movement of the wipers.

159. In a machine of the class described, the combination with shoe positioning means, of upper shaping mechanism comprising end embracing wipers having wiping edges curved in substantial conformity to the lengthwise contour of the edge of the shoe bottom, means for effecting relative movement of said shoe positioning means and wipers in a direction lengthwise of the shoe in such relation as to cause the wipers to engage the shoe initially on its lateral periphery outside of the plane of the shoe bottom and subsequently to wipe the upper inwardly over the shoe bottom, said shoe positioning means and upper shaping mechanism being constructed and arranged to permit a relative yield between the shoe and the wipers in a direction transverse to the plane of the shoe bottom in response to wedging action of the shoe against the wipers to cause the wipers to wipe the upper over the edge of the shoe bottom prior to their wiping action over the shoe bottom.

160. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers having wiping edges curved in substantial conformity to the lengthwise contour of the edge of the shoe bottom, spring means against which said wipers are yieldable in a direction transverse to the plane of the shoe bottom, and means for closing said wipers against the lateral periphery of the shoe and by relative movement of the shoe and the wipers causing them to be forced by wedging action of the shoe over the edge of the shoe bottom against resistance of said spring means prior to their continued inward closing movement.

161. In a machine of the class described,

the combination with shoe positioning means, of end embracing wipers having wiping edges curved in substantial conformity to the lengthwise contour of the edge of the shoe bottom, spring means against which said wipers may yield in a direction transverse to the plane of the shoe bottom, and operating means for moving said wipers yieldingly to force them against the lateral periphery of the shoe at the end and along the opposite sides of the end portion of the shoe and for increasing the operating pressure to cause the wipers to be wedged by the shoe toward the plane of the shoe bottom against the resistance of said spring means while continuing in close embracing relation to the shoe.

162. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support movable to carry the wipers lengthwise of the shoe, and means arranged to be operated by said movement of the wiper support for closing the wipers inward laterally of the shoe during their movement lengthwise of the shoe, said closing means being yieldable in response to resistance encountered by the wipers to permit the wipers to continue their movement lengthwise of the shoe without closing.

163. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support movable to carry the wipers lengthwise of the shoe, and independent connections to the respective wipers arranged to be operated by said movement of the wiper support for closing the wipers inward laterally of the shoe, said connections being independently yieldable in response to the resistance encountered by the wipers.

164. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support movable to carry the wipers lengthwise of the shoe, means operated by said movement of the wiper support for closing the wipers inward laterally of the shoe comprising parts movable with said support and cooperating parts normally held against movement with the support as the wipers are closed, and yielding means for controlling said last named parts to permit them to move with the wiper support in response to abnormal resistance encountered by the wipers.

165. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support movable to carry the wipers lengthwise of the shoe, means for closing the wipers inward laterally of the shoe comprising pinions carried by said wiper support and racks engaging said pinions and normally held against movement with said sup-

port as the wipers are closed, and spring means arranged to permit said racks to move with the wiper support in response to predetermined resistance to closing movement of said wipers.

166. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, and mechanisms operative each independently of the other through relative movement of the shoe and the wipers lengthwise of the shoe for closing the respective wipers inward laterally of the shoe, said mechanisms being adjustable each independently of the other to determine the initial positions of the wipers.

167. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support mounted for movement lengthwise of the shoe, and independent wiper closing connections arranged to be operated by said movement of the support for closing the respective wipers inward laterally of the shoe, said connections being adjustable each independently of the other to determine the initial positions of said wipers.

168. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support movable to carry the wipers lengthwise of the shoe, and means operated by said movement of the wiper support for closing the wipers inward laterally of the shoe during their movement lengthwise of the shoe comprising parts movable with said support and cooperating parts normally held against movement with the support, said last named parts being adjustable relatively to said support to determine the initial positions of the wipers.

169. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support mounted for movement lengthwise of the shoe, means for closing said wipers inward laterally of the shoe comprising pinions carried by said support and racks engaging said pinions and normally held against

movement with the wiper support, and means for adjusting said racks each independently of the other to determine the initial positions of the respective wipers.

170. In a machine of the class described, the combination with end embracing wipers, of means for relatively positioning a shoe and said wipers to cause the wipers to engage the lateral periphery of the shoe and then to be forced across the edge of the shoe bottom by wedging action of the shoe prior to their inward wiping movement over the shoe bottom, and power means automatically operative to impart to said wipers a plurality of reciprocatory wiping movements while maintaining them continuously over the shoe bottom.

171. In a machine of the class described, the combination with overlaying means, of shoe positioning means comprising a hold-down and a cooperating clamping member for engaging the work on the opposite side from said hold-down, a spring for forcing said member toward the hold-down, and means for operating the hold-down while said overlaying means is positioned over the shoe bottom to permit the work to be forced against the overlaying means by the action of said spring.

172. In a machine of the class described, the combination with a wiper and means for operating it to wipe the margin of an upper inwardly over the bottom of a last, of a hold-down for engaging the sole of the shoe on the bottom of the last, spring means tending to force the work toward said hold-down, and means for causing the hold-down to move after the wiper has been advanced inwardly across the edge of the shoe bottom to permit said spring means to force the work against the wiper.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES F. PYM

Witnesses:

ANNA M. DORR,
LEWIS E. FLANDERS.



DEFENDANT'S EXHIBIT "C"—Continued.

McFeely patent No. 1,558,737—October 27, 1935, a part of Defendant's Exhibit "C", being the same as Plaintiff's Exhibit No. 1, is not reproduced here. It will be found at the beginning of this volume, commencing on page 1.

DEFENDANT'S EXHIBIT Y-1-A.

(LETTERHEAD OF THE WILLIAMS MFG. CO.)

January 18, 1937.

Toulmin & Toulmin,
Mutual Home Bldg.,
Dayton, Ohio.
Gentlemen:—

I too have been out of the city, and haven't been able to answer your letter relative to the Moenus Heel Seat Lasting Machines which we have here.

The cams upon all of these machines are the identical cams with which they were equipped when they came from Germany. These cams or their attachments have not been changed by us in any way, shape, or form, nor has any one of them ever been changed or replaced by us.

Relative to the screw that goes through the clip at the back of the clamping member or band, I again state that we have never felt this was a very important part of this equipment; some of the screws have dropped out, and in order to eliminate any controversy on this particular item, we have sawed off from each of the leather bands the metal member which was used to attach the leather clamping member by the above mentioned set screw. This entirely eliminates any possible contention upon this score.

Messrs. Ryan & Condon saw this equipment in the identical condition that we use it, and without any change having been made upon any part by us here. Further, this machine is identical to the other machines that we have from Moenus.

Yours truly,

F. L. Williams

THE WILLIAMS MANUFACTURING CO.

FLW*RR

DEFENDANT'S EXHIBIT Y-1-B.

**TOULMIN & TOULMIN
DAYTON, OHIO**

January 21, 1937.

Mr. F. H. Lyman,
Fish, Richardson & Neave,
84 State Street,
Boston, Mass.

Dear Mr. Lyman:

IN RE: UNITED SHOE MACHINERY CORP. V.
WILLIAMS MANUFACTURING CO.

This is in reply to your letter of December 31, 1936. I note from your letter that there is some misapprehension on your part as to the facts. Therefore, the first thing to do is to clear up that misunderstanding in your mind.

The cam structure in the Moenus machines is the same cam structure received in the machines when they came from Germany, and has never been replaced or changed. In the second place the back support for the clamping band has not been utilized.

We have received the following letter from the Williams Manufacturing Company when we asked them to comment on your letter of December 31st. The letter reads:

"The cams upon all of these machines are the identical cams with which they were equipped when they came from Germany. These cams or their attachments have not been changed by us in any way, shape or form, nor has any one of them ever been changed or replaced by us.

"Relative to the screw that goes through the clip at the back of the clamping member or bank, I again state that we have never felt this was a very important part of this equipment; some of the screws have dropped out, and in order to eliminate any controversy on this particular item, we have sawed off from each of the leather bands the metal member which was used to attach the leather clamping member by the above mentioned set screw. This entirely eliminates any possible contention upon this score.

"Messrs. Ryan & Condon saw this equipment in the identical condition that we use it, and without any change having been made upon

Defendant's Exhibit Y-1-B.

any part by us here. Further, this machine is identical to the other machines that we have from Moenus."

With this background of fact, and the complete elimination of any possible use of the back support for the clamp, we reply to the questions raised in your letter as follows. We can not agree with you as to the infringement of McFeely patent, No. 1,558,737 in connection with claims 6, 84, 85 and 107, but the question is moot in view of the fact that the first McFeely patent, No. 1,129,881, which is practically a duplicate of the second McFeely patent shows precisely everything called for by these claims. We can find no difference. Of course, we would be glad to have your views as to any difference between the claims in question of the second McFeely patent and the disclosure of the first McFeely patent.

As to claims 21, 22, 27, 28 and 91, each of these claims is limited to the back support for the clamp, which we have not used. The machine has positively been fixed so that no one could use such a back support. These claims also read upon the first McFeely patent which has such a back support as you will observe from Figure 2, Figure 18, Figure 19, Figure 9, et cetera. But here again, the question is moot because we do not use this element which is found in each claim. We have no movable adjusting member connected to the closed or rear end of the clamping member. We have cut off the clip so that your suggestion that the operator could replace the screw at any time would not be correct, because with cutting off the clip, that would not be possible.

With reference to claims 38-41, 47-55, 68-75, 93 and 110, these are on upwipe claims as you correctly say in your letter, and there is no infringement of these claims by the machine which your representatives saw. You are incorrect in your assumption that this cam has been changed. The cam is the same precisely as that received in the machines from Germany. You are perfectly welcome to write the Moenus Company and verify this fact, if you wish to do so. Of course, it is beside the point to say that the cam could be changed. It has never been changed, and as we have no intention of changing it because we do not need to do so, these claims are no longer of any interest.

With reference to the Hoyt patent, No. 1,508,394, in our judgment, there is no infringement, because we do

Defendant's Exhibit Y-1-B.

not have unyielding connections between the operating member and the band for forcing the ends of the band against the shoe. We have a yielding means in the apparatus which provides for a yielding pressing of the shoe, rather than an unyielding pressure. We do not have any means for supporting the band because that has been eliminated with the elimination of the screw.

As to the Pym patent, No. 1,368,968, and claims 168, we do not find any means in our machine operated by the lengthwise movement of the shoe to move the wiper support for closing the wipers inward laterally of the shoe. As you have been kind enough to go into this matter fairly and impartially we believe it is equally due you to advise you of the prior art defenses we would rely upon which we believe clearly anticipate your claims irrespective of the fact that we believe we do not infringe.

The two McFeely patents, the one you rely upon and the earlier one that has expired, are virtual duplicates. Even the drawings are so much alike that only one saturated with the subject can tell them apart. The slight mechanical differences between the two patents which can be observed only upon a very careful study of the patents amount to no more than the substituting in the second patent of features old in the art which appear in the first patent. You are familiar with the recent case in the Supreme Court of the United States in which this method of trying to extend a monopoly of an earlier patent by a later patent was condemned. The Supreme Court said:

"The question then is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other federal courts."

"Edison Electric Light Co. v. Peninsular Light P. & H. Co., 101 Fed. 831; Heald v. Rice, 104 U. S. 737, 755; Underwood v. Corber, 149 U. S. 224, 227, 229; Morgan Envelope Co. v. Albany Paper Co., 152 U. S. 425, 431, 432; Carbiere Corporation v. American Patents Development Corporation, 283 U. S. 27, 31, 32; Wagner Typewriter Company v. Webster Co.,

Defendant's Exhibit Y-1-B.

144 Fed. 405, 409; Langen v. Warren Axe & Tool Co., 184 Fed. 720; Harvey-Hubbell, Inc. v. General Electric Co., 267 Fed. 564; Troy Wagon Works Co. v. Ohio Trailer Co., 274 Fed. 612; General Electric Co. v. Ohio Brass Co., 277 Fed. 917; Radio Corporation v. Lord, 28 F. (2d) 257; Wall Pump & C. Co. v. Gardner Governor Co., 28 F. (2d) 334"

Bassick Manufacturing Company v. The R. M. Hollingshead Company; G. S. Rogers v. Alemite Corporation; 298 U. S. 415.

In our opinion, not only are your claims of the second McFeely patent anticipated by the first McFeely patent, but they are also anticipated by your own Pym patent, which was filed nine months earlier than the McFeely patent. Furthermore, the following patents anticipate your McFeely patent; German patent No. 293,626, with a priority of June 1911; U. S. patent No. 1,030,847; Bayard patent No. 1,068,843; Russell patent No. 1,033,946 of 1912; Plant reissue No. 13,507 of 1913; Brock patent No. 1,197,437 of 1916; German patent No. 90,388 of 1894 to Ferguson; Plant patent of U. S. No. 958,280; Snow reissue No. 13,292; Merrick patent No. 1,245,117; reissue No. 13,718; No. 1,135,945; British patent No. 23,947 of 1912; reissue No. 13,505 of 1913; No. 1,188,616; No. 524,445 of 1894.

With particular reference to the rear support of the heel clamp we refer you to Keyes, No. 1,023,854; German patent No. 248,247 of 1910; Baxter No. 1,171,383, Figure 5; Brock No. 1,188,617; Chapelle No. 1,168,011 of 1913; Brock No. 1,030,562; Russell No. 1,132,978, Figure 2; Brock No. 1,002,818, Figure 1; Snow No. 946,708; Lombard No. 524,445, Figure 2; Stiggins No. 935,065; King No. 672,624; Grandy No. 588,569; Stiggins No. 1,132,630, Figure 1; Brock 1,284,870, Figure 4; Stiggins No. 1,104,016, Figures 2 and 3.

With reference to your Hoyt patent No. 1,508,394, we find that Hoyt is anticipated by both McFeely patents, Nos. 1,129,881 and 1,558,737, by Pym No. 1,368,968 and by the following patents; Stiggins No. 236,066 of 1909, Figure 2; Brock No. 1,197,439, Figures 3 and 4; Stiggins No. 974,282; Snow No. 946,708, Figure 2; German No. 325,624 of 1918 taken out by Moenus; German No. 359,193 of June 1911, taken out by United Shoe Machinery Corporation; Ray patent No. 669,231, Figure 2; and British patent 451 of 1915, Figure 2.

Defendant's Exhibit Y-1-B.

We would be very glad to go over these matters together and elaborate our position more fully if you so desire. As we now view the matter, we can not see any infringement, and we find your patents are invalid as to the claims in question. We sincerely trust that this matter may be adjusted in some fashion that will not impose upon our client or yours the expense of litigation, and which will not result in defeating your patents, as our client has no desire to disturb your patent situation in any way. I think you understand that friendly attitude.

If you desire to talk over this matter, I am at your service.

Very truly yours,

DEFENDANT'S EXHIBIT Z-1.

(LETTERHEAD OF THE WILLIAMS MFG. CO.)

February 9, 1938.

Toulmin & Toulmin,
Mutual Home Bldg.,
Dayton, Ohio.

RE: UNITED V. WILLIAMS

Gentlemen:

We removed the springs referred to in our previous correspondence from the fourth heel seat tacker which we have in operation, yesterday, February 7th.

After operating three machines without the springs and one machine with the springs since about December 28th, we found absolutely no difference in the results obtained, either in the operation of the machine or the operation performed.

Yours truly,

B. T. Gialdini

THE WILLIAMS MANUFACTURING CO.

B. T. Gialdini,
EC

PLAINTIFF'S EXHIBIT 9.

December 17, 1935.

Albeko Shoe Machinery Corporation,
710 Broadway,
New York, N. Y.

REGISTERED

Gentlemen:

On behalf of our client, United Shoe Machinery Corporation, we hereby notify you of your infringement of our client's patents as follows:

- McFeely patent No. 1,558,737, October 27, 1925;
- Hoyt patent No. 1,508,394, September 16, 1924;
- Pym patent No. 1,368,968, February 15, 1921.

Said infringement is by reason of your sales of and activities with the so-called Moenus heel seat lasting machine No. 1224 which you have been importing. We find this machine to be a very clear and comprehensive infringement of our client's patents. For your convenience we call your attention to claims of the patents which we find to be infringed as follows:

- McFeely patent, claims 6, 21, 22, 23, 24, 26, 27, 28, 38, 39, 40, 41, 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 68, 69, 70, 71, 72, 73, 74, 75, 84, 85, 91, 92, 93, 107 and 110;
- Hoyt patent, claims 19, 20, 21 and 22;
- Pym patent, claim 168.

We must request that you immediately desist from all further importation of said machine, that you make no further disposition of such infringing machines by sale or otherwise, stopping all further efforts in that direction, and that you arrange to withdraw such infringing machines as you have already put out. Otherwise it will be necessary for us to bring suit against you for an injunction and an accounting.

Kindly let us have your reply very promptly.

Yours very truly,



3. The "Calzera" automatic heel seat laster No. 1224.

This is an excellent machine for the important operation of seat lasting. The total seat is done by one single stroke. The drawbacks of the previous lasting methods have been fully eliminated, and a better work can be done to meet the more exacting requirements. The difference between the old and the new method is this. On the ordinary consol laster the tacks could be driven in at the seat one by one only. The wiper could not press the margin of the upper firmly enough upon the insole, and the pincer pull was thus paralysed. It took 14 to 20 separate strokes to last one seat. Lining, upper and counter were not sufficiently moulded to the last and even a heavy pounding could not make good the lacking moulding.

How perfect on the other hand is the seat lasting done on the "Calzera". This machine combines two operations in one.

1. It shapes the seat portion exactly to the last by the aid of a heel band, wipes the upper twice under a strong pressure by means of wiper plates and presses the margin of the upper flat upon the insole.
2. The required number of tacks is driven in automatically with one stroke at equal distances, in the same direction and to equal depth. The wiper plates have openings through which the tacks are driven, while the lasted over margin is still firmly held by the wiper plates. There are no more crooked tack heads, cross driven or wasted tacks.

The contours of the last are rightly reflected by the shoe and a good fitting is ensured.

The result is astonishing:

1. The heel portion is perfectly shaped by the wipers.
2. Last edge of unsurpassed beauty and distinction is obtained, providing the base for good heel fitting.
3. The entire heel portion hugs the last closely and an accurate fitting is ensured. Treading the counter down during wear is fully eliminated.
4. Seat pounding becomes superfluous to a great extent.

Are these not long wanted advantages?

The "Calzera" heel seat laster is used:

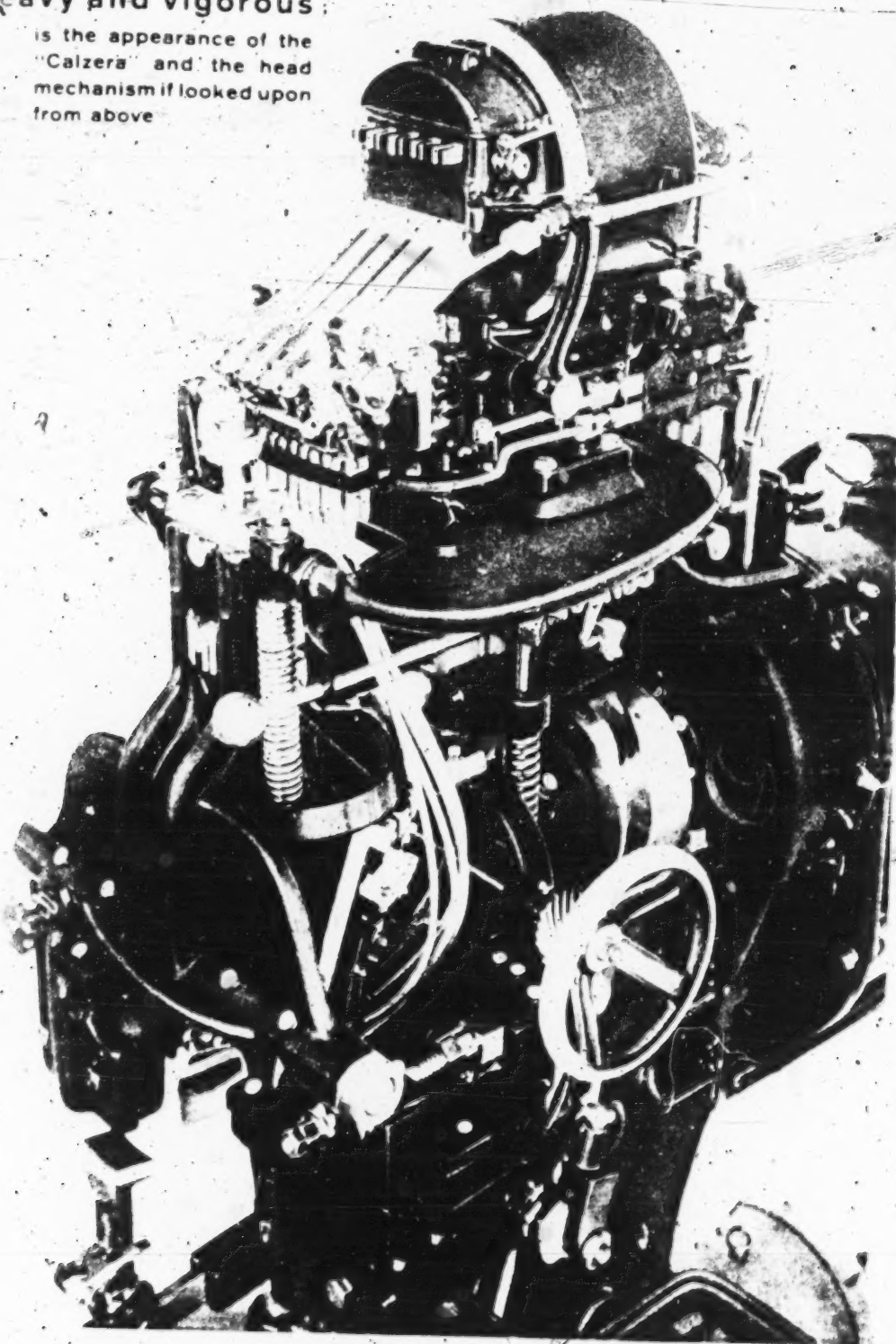
1. for any size and kind of shoes, from the smallest children's size up to the largest men's,
2. for the lightest as well as for the heaviest footwear,
3. for leather of any grade, but just as well for canvases or camel hair uppers,
4. for welted, machine sewn, wood pegged, studded and screwed work and their varieties,
5. for boots and shoes of any kind.

Normally we fit the machine with ordinary jack. However, on request it is also delivered with long jack for high leg boots.

The nailing is self-acting. There are always separated from the tack drum so many tacks, as are required for the respective shoe: for children's and youth

Heavy and vigorous

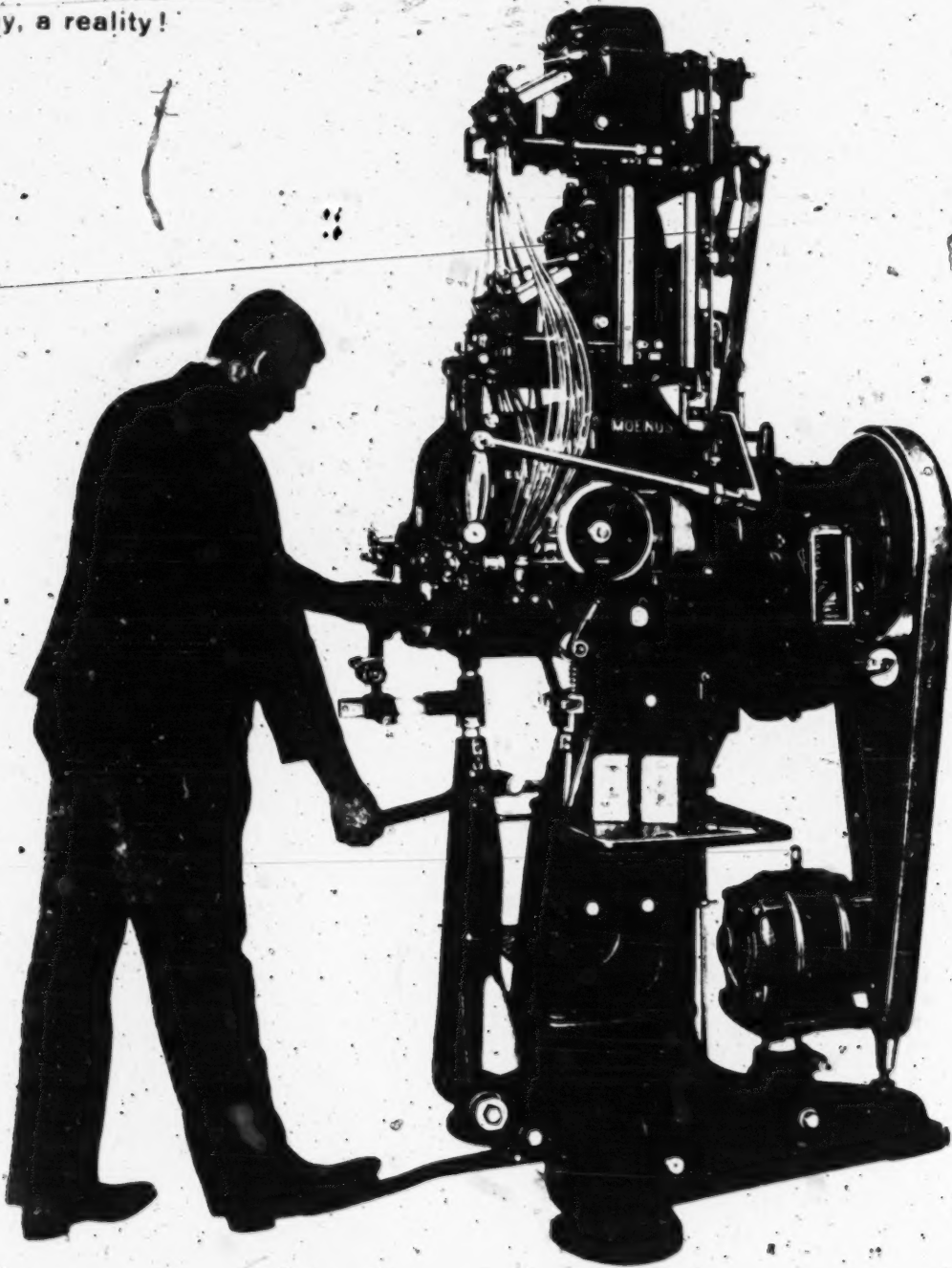
is the appearance of the
"Calzera" and the head
mechanism if looked upon
from above



The eye sees a masterly creation of engineering

PLTFF'S EX
10-A

But a few years ago
a problem—
today, a reality!



The piping and nailing of the entire heel seat done by two rotations of the machine

As shown by the picture, we now deliver the "Calzera" also
with two tack apparatuses (for two different lengths of tacks)

Mostly 12 to 14 tacks for ladies, 14 to 16, and for men's shoes 16 to 18. In some cases also 20 tacks. A simple switching over will set the machine for a different number of tacks.

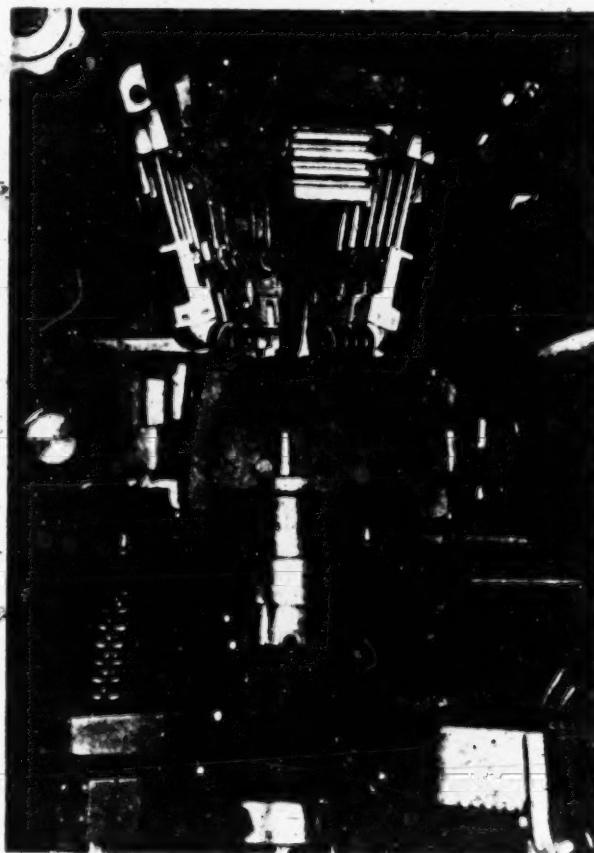
In factories where the class of the shoes varies widely, the machine is usually delivered with a **second tack drum** against extra charge. The merit of this second tack drum is, that two different lengths of tacks can be used on the machine without having to empty the tack drum frequently, in order to refit it afterwards with the size just needed.

The advantages of the "Calzera" as compared with the ordinary consol laster are extraordinarily good work and a much higher efficiency with the resulting savings in wages, power and floor space. Generally speaking one "Calzera" machine when being fully utilized will do, as a standard, from 1600 to 2000 pairs of shoes a day, so that it does replace at least 3 consol lasters if these are exclusively used for seat lasting.

As striking as the enormous capacity is the quality work obtained. The production of the "Calzera" has stood the test in every factory. A heavy or light upper and gounter is worked over by the machine as easily as if it were a light shoe. The man on the consol tacker could never reach a lasted sole of perfect flatness on such heavy stock, even trying his hardest. The heavy plates down to the inside of the naturally had not so much strength as the automatic machine, and this does away with the excessive wiping of the sole. The work on the "Calzera" seat is different from seat work on a consol laster. The last that is used on the "Calzera" can be mostly of a light construction and will do the work of a heavy one in the wiping of the sole and consequent smoothing of the sole. The work is done in a few days' footwear.

The movement in the construction of the shoe was the main reason for the shoe manufacturer to buy the "Calzera". The quicker work and lower wages are to be taken into separate account.

Like many skilled fingers, the wiper plates shape the material at the heel seat fast under a strong pressure whilst the heel band and the upper firmly



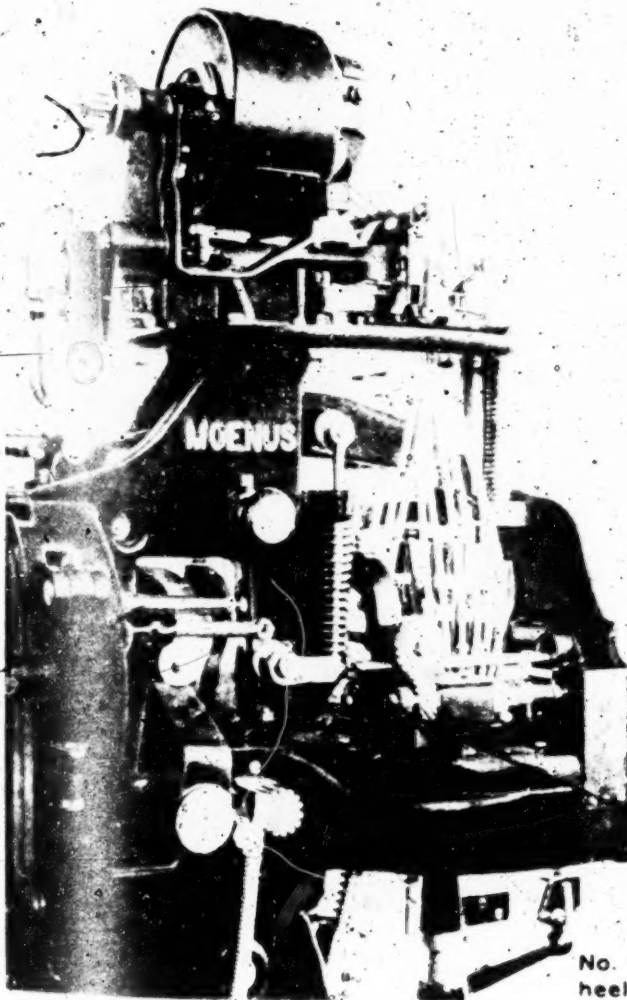
A machine that impresses everybody!

The imposing appearance of the "Calzera" together with the possibility to force and set the entire seat in one operation demands respect and surprise. There is no doubt that the "Calzera" is the joy and the pride of every factory.

What factories use the "Calzera" to advantage?

It is quite evident from the foregoing, that the use of the "Calzera" seat laster is not limited to those factories with a mass production or those which dispose of surplus money. This machine is rather used to advantage also by factories with medium capacity, even down to a daily production of 300 pairs. Possibly, just these medium factories derive the biggest profit from this machine, which helps them to increase their capacity, to improve the quality of their products and also to reduce the manufacturing costs. For these reasons the "Calzera" can no more be regarded as something that can be dispensed with. The price of the machine is not prohibitive, so that the majority of the shoe factories can

afford to buy the "Calzera" seat laster. The machine is not a privilege for the large manufacturer. Many small factories, which bought the "Moenus" seat laster, did never regret it or have ever complained about any point. We are sure that once the machine has been started in your factory, you would not like to miss it again, on the contrary you will become enthusiastic of the machine and its enormous capacity.



No. 1224 "Calzera" automatic heel seat laster — side view

PLAINTIFF'S EXHIBIT 12-A.

(LETTERHEAD OF ALBEKO SHOE MACHINERY CORPORATION)

January 30, 1936.

United Shoe Machinery Corp.
140 Federal Street
Boston, Mass.

Gentlemen:

With reference to the Heel Seat Lasting Machine, on which you claim an infringement on some of the patents, Mr. Bruno Kath, patent adviser of Maschinenfabrik Moenus A.G., is at present in New York and would like to discuss the matter with you.

Mr. Kath will call on you Monday morning, February 3rd., and we hope this will be agreeable.

Yours very truly.

ALBEKO SHOE MACHINERY CORP.
By Herman Schwaley

HS.F.

PLAINTIFF'S EXHIBIT 12-B.

January 31, 1936.

Albeko Shoe Machinery Corporation.
710 Broadway
New York City, New York

Dear Sirs:

MOENUS HEEL SEAT LASTING MACHINE

Your letter of January 30, 1936, has been received. We shall be glad to see Mr. Bruno Kath on Monday morning, February 3. If upon arriving at our offices he will ask for the writer in Room 1022, we will see that he meets the right people.

Very truly yours,

UNITED SHOE MACHINERY CORPORATION
Patent Department
By Victor Cobb (Signed)

VC:OBH

PLAINTIFF'S EXHIBIT 12-C.

February 5, 1936.

Mr. Bruno Kath, Patent Engineer
 Moenus Maschinenfabrik A. G.
 Frankfurt, A.M., Germany

Dear Mr. Kath:

MOENUS HEEL SEAT LASTING MACHINE

We have recently discussed with you the patent infringement situation existing by reason of the installation in the United States, of Moenus Heel Seat Lasting Machines. This situation is set forth more fully in the letter of December 17, 1935, from our counsel, A. D. Salinger, Esq., to the Albeko Shoe Machinery Corporation. You have this morning shown us a cable which you construe as indicating the intention of your firm to remove all the heel seat lasting machines of the type in question from the United States. "All the machines" we understand to mean all such heel seat lasting machines whether in the possession of your company, Albeko, or others. If you will confirm this by a suitable letter and promptly remove all the machines from the United States, we will drop the infringement charge.

Very truly yours,

UNITED SHOE MACHINERY CORPORATION
 Patent Department
 By Victor Cobb (Signed)

VC:OBH

PLAINTIFF'S EXHIBIT 12-D.

(LETTERHEAD OF THE MOENUS COMPANY)

28th February, 1936

Messrs. United Shoe Machinery Co. Ka/Kfm.
 140 Federal Street
 Boston, Mass.
 USA.

Gentlemen,

RE HEEL SEAT LASTING MACHINE

We beg to revert to your letter of the 5th inst. addressed to our Patent Engineer, Mr. Bruno Kath, and beg to thank you for the reception you have given Mr.

Plaintiff's Exhibit 12-D.

Kath and for the opportunity afforded to him of discussing in a friendly way the patent infringement situation which has arisen in respect of our above machine.

We herewith beg to confirm the informations which Mr. Kath has given you, that we will remove all our heel seat lasting machines of the type in question from the United States, whether these machines are in possession of our company, our representatives, or others. We have already taken the necessary steps to this effect and thereby complied with your demand.

Yours very truly,

MASCHINENFABRIK MOENUS A. G.

PLAINTIFF'S EXHIBIT 12-E.

Sent after consultation
with Mr. H. A. Osborne and
with his approval.

V.C. 3/11/36

March 11, 1936

Maschinenfabrik Moenus A. G.
Frankfurt, A.M., Germany

Dear Sirs:

MOENUS HEEL SEAT LASTING MACHINES

We have just received your letter of February 28, 1936, regarding the above. We wish to thank you for the assurances which you have given us that you will remove all your heel seat lasting machines of the type in question from the United States, whether these machines are in the possession of your company, your representatives or others, and that you are already taking the necessary steps to this effect.

As the writer told your Mr. Bruno Kath when he was here last month, we have received a report, in which we have considerable confidence but as to the accuracy of which we cannot be entirely certain, that several of these heel seat lasting machines of your manufacture were in the factory of the Williams Manufacturing Company at Portsmouth, Ohio. We are of course relying upon you, if it is a fact that such machines are in the Williams Company factory, to make arrangements which will result in the withdrawal of those machines, as well as all other Moenus heel seat lasting machines of the type in question, from the United States.

Plaintiff's Exhibit 12-E.

We will expect to hear from you again as soon as all the machines in question have been removed from this country and will appreciate a definite statement as to the Williams Manufacturing Company situation.

Very truly yours,

UNITED SHOE MACHINERY CORPORATION
Patent Department
By Victor Cobb (Signed)

VC:OBH
IW

PLAINTIFF'S EXHIBIT 12-G.

(LETTERHEAD OF THE MOENUS COMPANY)

United Shoe Machinery Corporation
Patent Department
140 Federal Street,
Boston, Mass.

September 4, 1936.

Dear Sirs,

RE: HEEL SEAT LASTING MACHINE PATENTS

This is a cursory reply to your letter of March 11th. We just wish to inform you that we are in communication with our customers in the United States regarding the return of our heel seat lasting machines to us. Our customers have a few queries for us to attend, as naturally our demand to return the machines is an unpleasant surprise to them; but there do not appear to be any serious obstacles and we are confident that the removal of the machines from the United States will be a matter of a comparatively short time.

Yours very truly

MASCHINENFABRIK MOENUS A. G.

PLAINTIFF'S EXHIBIT 12-H.

July 2, 1936.

Maschinenfabrik Moenus A. G.
Frankfurt, A.M., Germany

Dear Sirs:

INFRINGEMENT OF UNITED SHOE MACHINERY CORPORATION PATENTS BY MOENUS HEEL SEAT LASTING MACHINE

Under date of February 28, 1936, after we had discussed with Mr. Bruno Kath the situation presented by the infringement of our patents by your heel seat lasting machine, you wrote us:

"we will remove all our heel seat lasting machines of the type in question from the United States, whether these machines are in possession of our company, our representatives, or others. We have already taken the necessary steps to this effect and thereby complied with your demand."

Under date of April 9, 1936, you wrote us:

"there do not appear to be any serious obstacles and we are confident that the removal of the machines from the United States will be a matter of a comparatively short time."

We have recently been informed that the Williams Manufacturing Company, of Portsmouth, Ohio, U. S. A., is still using several heel seat lasting machines of your manufacture. You will remember that our dropping of the infringement charge sent by our attorney to Albeko Shoe Machinery Corporation on December 17, 1935, was conditional upon your prompt removal from the United States of all infringing machines, whether in the possession of your company, Albeko or others (see our letter of February 5, 1936, to Mr. Bruno Kath).

We have heard nothing from you since your communications referred to above. Under these circumstances, we must ask that you send us at an early date a statement of the number of the infringing machines still outstanding in this country, with the names and addresses of the users of those machines, together with a state-

Plaintiff's Exhibit 12-H.

ment as to your plans for bringing about their removal from the United States.

Very truly yours,

UNITED SHOE MACHINERY CORPORATION
Patent Department
By Victor Cobb (Signed)

VC:OBH

Note: The above was written after consultation with Mr. H. A. Osborne. It has been approved by Mr. H. G. Donham.

V. C.

PLAINTIFF'S EXHIBIT 12-I.
(POSTAL TELEGRAPH)

NA61 18 CABLE—N FRANKFURTMAIN 20 0838
HOWPAT—
BOSTON—

(Harlow M. Davis
United Shoe Machinery Co.,
Room 1022, 140 Federal Street)

Your letter second instant customer has already promised return machines we are calling him simultaneously—
—MOENUS.

H. A. OSBORNE
Jul 27 1936

PLAINTIFF'S EXHIBIT 12-J.
(LETTERHEAD OF THE MOENUS COMPANY)

Ka/Kfm. 20th July 1936

Messrs. United Shoe Machinery Corporation
Patent Department
140 Federal Street
Boston, Mass.
USA.

Dear Sirs,

RE INFRINGEMENT OF UNITED SHOE MACHINERY
CORPORATION PATENTS BY MOENUS HEEL SEAT
LASTING MACHINE.

We received your letter of the 2nd inst. You will understand that our customer has found himself in an

Plaintiff's Exhibit 12-J.

unpleasant position having to give up the use of the heel seat lasters. We had some lengthy correspondence with him over the patent position as naturally he had to be satisfied that your allegations are correct before he could decide to give up the machines. Meanwhile he has agreed to return the machines to Frankfurt and although we have not yet received the information of the machines having actually been dispatched, we presume that the delay is only due to his having to make extensive arrangements to meet the new situation.

We have cabled to our customer to-day and have no doubt that we shall get a satisfactory reply, the gist of which will be communicated to you. Meanwhile we would ask your indulgence for another short time. If no satisfactory reply should come forth we will then give you the informations you required from us. As a cursory reply to your letter we have cabled you to-day as follows:

"your letter second instant customer has already promised return machines we are cabling him simultaneously."

Yours faithfully,

MASCHINENFABRIK MOENUS A. G.

PLAINTIFF'S EXHIBIT 12-K.

(LETTERHEAD OF THE MOENUS COMPANY)

Ka./SCH.

27.7.36.

Messrs. United Shoe Machinery Corporation,
140 Federal Street,
Boston, Mass. U.S.A.

Dear Sirs:

RE: PATENTS, HEEL SEAT LASTING MACHINE

In further reply to your letter of the 2nd inst. we beg to inform you, that we have received a cable from our customers, in which they notify us that they were communicating with you directly.

In view of this communication we have no further hesitation [sic] in confirming you that your anticipation of our customers being the Williams Manufacturing Company, of Portsmouth, Ohio, is correct. At the same time we beg to emphasize that the heel seat lasters sup-

Plaintiff's Exhibit 12-K.

plied to this firm are the only machines of the kind complained of supplied by us in the United States. There are no others in use nor are there any being offered with our knowledge or consent.

We hope that an agreement will be reached between you and Messrs. Williams and whatever arrangement you may come to it will settle the question of the last and only heel seat lasting machines of our production which are still in use in a United States shoe factory.

After you have come to an understanding with Messrs. Williams we should appreciate a letter from you to the extent that the matter has been settled.

Yours very truly,

MASCHINENFABRIK MOENUS A. G.

PLAINTIFF'S EXHIBIT 12-L.

Maschinenfabrik Moenus A. G.
Frankfurt a. Main
Germany

March 26, 1937.

Gentlemen:

WILLIAMS MFG. COMPANY—PORTSMOUTH, OHIO.
INFRINGEMENT OF UNITED SHOE MACHINERY CORPORATION'S PATENTS BY MOENUS HEEL SEAT LASTING MACHINE.

Since receiving your letter of July 28, 1936, we have communicated at length with the Williams Mfg. Company but have not been able to reach a satisfactory agreement with them. With reference to this matter will you please inform us if we are correct in understanding that you requested the Williams Mfg. Company to return to you the Heel Seat Lasting Machines of your manufacture and offered to pay the Williams Company what they had paid for the machines.

Very truly yours,

UNITED SHOE MACHINERY CORPORATION
Patent Department
By Victor Cobb (Signed)

TJR:IW

PLAINTIFF'S EXHIBIT 12-M.**(LETTERHEAD OF THE MOENUS COMPANY)**

Ka./Sch.

13.4.37.

Messrs. United Shoe Machinery Co.
140 Federal Street
Boston, Mass.

Gentlemen:

RE: WILLIAMS MFG. CO., PORTSMOUTH. HEEL SEAT
LASTING MACHINE PATENTS.

Replying to your letter of the 26th ult. we regret to note that no satisfactory agreement has as yet been reached between yourselves and Messrs. Williams Mfg. Co. With respect to the question contained in your letter we beg to confirm that we have requested the Williams Mfg. Company to return to us the Heel Seat Lasting Machines, which we supplied to them, against certain compensations the extent of which we do not consider ourselves entitled to state without the consent of Messrs. Williams.

We hope, however, that this information will serve your purpose and are

Yours very truly,

MASCHINENFABRIK MOENUS A. G.

In the Supreme Court of the United States
OCTOBER TERM, 1941.

No. 332.....

THE WILLIAMS MANUFACTURING COMPANY,
Petitioner,

vs.

UNITED SHOE MACHINERY CORPORATION,
Respondent.

PETITION FOR WRIT OF CERTIORARI
To the United States Circuit Court of Appeals
For the Sixth Circuit, and
BRIEF IN SUPPORT OF PETITION.

H. A. TOULMIN, JR.,
Mutual Home Building,
Dayton, Ohio,
Attorney for Petitioner.

JAMES B. O'DONNELL;
H. A. TOULMIN,
H. A. TOULMIN, JR.,
ROWAN A. GREER,
Of Counsel.

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Authorities Cited.

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In the Supreme Court of the United States

OCTOBER TERM, 1941.

No.

THE WILLIAMS MANUFACTURING COMPANY,

Petitioner,

vs.

UNITED SHOE MACHINERY CORPORATION,

Respondent.

PETITION FOR WRIT OF CERTIORARI

To the United States Circuit Court of Appeals

For the Sixth Circuit.

*To the Honorable the Chief Justice of the
United States, and the Associate Justices
of the Supreme Court of the United States:*

Your petitioner, The Williams Manufacturing Company, respectfully prays for a writ of certiorari to the Circuit Court of Appeals for the Sixth Circuit to review the judgment of that court entered on June 25, 1941.

SUMMARY AND SHORT STATEMENT.

The issue here is the extent of the right to repatent an expired monopoly affecting the entire shoe industry.

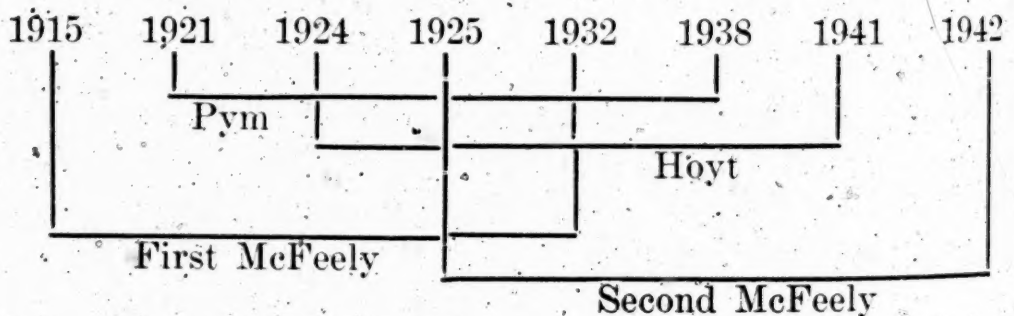
Petitioner was defendant in the District Court, where the respondent prevailed on both patents in suit, the District Court holding the two patents in suit valid and infringed. The Circuit Court of Appeals for the Sixth Circuit reversed the District Court, in part, holding the McFeely patent No. 1,558,737, valid and infringed and the Hoyt patent No. 1,508,394, invalid. Judge Elwood Hamilton of that Court dissented. The primary issue in both courts was the

extension of monopoly by the respondent, the United Shoe Machinery Corporation, in repatenting old expired combinations of its expired patents in new patents in which adjustments, old *per se* in the art, were substituted in the old combination and were reclaimed in broad combinations with the old basic machine covered by respondent's own expired patents.

This extension of monopoly was effected in this manner. The Bill of Complaint was originally founded upon three patents: Pym patent No. 1,368,968, of February 15, 1921, expiring February 15, 1938, covering bed lasters without the superimposed automatic tackers; the second¹ McFeely patent No. 1,558,737, granted October 27, 1925, expiring October 27, 1942, covering bed lasters in combination with automatic tackers; and Hoyt patent No. 1,508,394, granted September 16, 1924, expiring September 16, 1941, for another improved form of combined bed laster and automatic tackers. Respondent withdrew its suit on the expired Pym patent before trial.

The second McFeely patent in suit was abandoned by its owner, the United Shoe Machinery Corporation, in the Patent Office on the 15th day of July, 1921, and renewed on the 24th day of May, 1922. If it had not been so abandoned, it would have issued and now be expired.

The pattern for the extension of monopoly by overlapping patents on heel seat lasting machines of the Respondent is shown in the following diagram of dates of issue and expiration of patents:



¹ The first McFeely patent No. 1,129,881 is the primary anticipatory reference whose expired monopoly is repatented by the second McFeely patent No. 1,558,737 in suit.

The United Shoe Machinery Corporation, respondent, owned the principal prior patent, the first McFeely patent No. 1,129,881, issued March 2, 1915, expiring March 2, 1932. This patent covered the complete combination of a bed laster and automatic tackers for the heel seat lasting of shoes. It was built by the United Shoe Machinery Corporation and placed in the plant of the Victor Shoe Company, where it operated under commercial conditions successfully, lasting shoes of various sizes, and was acclaimed before the United States Patent Office, by affidavit from the employees of the United Shoe Machinery Corporation, as a pioneer advance, successful commercially, and the first McFeely patent was granted accordingly. (R. Vol. 1, pp. 471-6, Def. Exh. H-2.)

In the District Court the Respondent, United Shoe Machinery Corporation, took the position that the machine of the first McFeely patent had never been built and was not a commercial machine. (R. Vol. 1, p. 396.) This proof was promptly challenged by the petitioner who produced, before the decision of the District Court and before argument, the certified copy of the filewrapper of the first McFeely patent, containing affidavits of respondent's employees, filed in the United States Patent Office, that the machine of the first McFeely patent had been successfully and commercially used on various sizes of shoes. (Opinion of Court of Appeals, R. 509-10, Vol. 1.) The District Court rejected this evidence as being offered too late, and found that the McFeely patent in suit was the first commercially successful heel seat lasting machine. (R. Vol. 1, pp. 478-9.) The Circuit Court of Appeals for the Sixth Circuit disapproved this course of the District Court and gave this evidence consideration, saying: "Although the machine successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory." (R. 510, Vol. 1.)

Respondent has placed 1200 machines with shoe manufacturers. The issue of the control by a patent of these expensive and complicated machines, which constitutes one of the major expenses of making shoes, is of great public interest. (R. Vol. 1, p. 124, A. 6; Ib. 399; Ib. 483.)

The differences claimed by respondent as to the second McFeely patent over the first to enable the second machine to operate on a greater range of sizes are:

(a) Means for preliminary **adjustment** of the wipers or tackers to accommodate a greater variety of sizes of shoes. (Old in prior art patents, R. Vol. 2, pp. 114, 122, 134, 140, 222, 238, 240.)

(b) Sliding heel band **adjustment** for the in and out movement of the shoe. (Old in prior art patents, R. Vol. 2, pp. 114, 122, 134, 172, 384, 440.)

(c) Means for **adjusting** the amount of vertical movement of the hold-down for the adjustment of the height of the shoe in the machine. (Old in prior art patents, R. Vol. 2, pp. 232, 440.)

These three adjustments are old **per se** in this art and have been used in numerous heel seat lasting machines shown in the above expired patents.

The Decision of the District Court.

The District Court held both patents valid and infringed, and that the improvements and adjustments of the second McFeely, included in the claims to the broad combinations, entitled respondent to repatent the entire combination of bed laster and automatic tackers, because these improvements-adjustments enabled the second McFeely patent to operate upon a wider range of sizes of shoes and, therefore, made the second McFeely construction with the three adjustments a more commercially successful machine. (R. 483, Vol. 1.)

The Decision of the Court of Appeals.

The Circuit Court of Appeals followed the decision of the District Court in sustaining the second McFeely patent as valid and infringed. It failed to follow the doctrine on extension of monopoly as laid down by this Court in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner*, 303 U. S. 545. It reversed the District Court as to the Hoyt patent. Judge Elwood Hamilton of the Circuit Court of Appeals dissented without a dissenting opinion.

REASONS RELIED UPON FOR THE ALLOWANCE OF THE WRIT.

Petitioner believes that writ of certiorari should be granted in this case for the following reasons and accordingly the discretionary power of this Court is invoked:

Extension of Expired Monopoly.

1. That the Circuit Court of Appeals for the Sixth Circuit, in holding the second McFeely patent No. 1,558,737, valid over the prior invention and patent of McFeely No. 1,129,881, has rendered a decision in conflict with the principles of the decisions of this Court in *Bassick v. Hollingshead*, 298 U. S. 415 and *Lincoln v. Stewart Warner*, 303 U. S. 545, prohibiting the extension of monopoly of an expired patent by the substitution of mechanical details, already old in the art, in a second patent in an identical basic mechanism as in the first expired patent,—a mere substitution or improvement of parts in an old combination. The failure to follow established rules of this Court is ground for certiorari. *Cities Service v. Dunlap*, 308 U. S. 208.

Aggregation: Extension of Monopoly.

2. That the Circuit Court of Appeals for the Sixth Circuit in upholding the validity of McFeely patent No. 1,558,737, which merely aggregates old adjusting features with an old combination, has rendered a decision in conflict with the principles applied in such cases as *Grinnell v. Johnson Co.*, 247 U. S. 426.

Commercial Success of Prior Art Unnecessary for Anticipation.

3. That the Circuit Court of Appeals for the Sixth Circuit in upholding the validity of McFeely patent No. 1,558,737 has rendered a decision in conflict with the decision of this Court and the principles therein as applied in such cases as *Smith v. James* and *Smith v. Hall*, 301 U. S. 216, to the effect that a prior machine constitutes anticipation, even though it is commercially unsuccessful and is incapable of operating to the fullest range of capacity to adapt it for commercial operation. The decision of the Court of Appeals herein is in conflict with the principles announced in the decision of this Court in *Smith v. James, supra*, in which the Hastings prior use was held to anticipate the Smith patent notwithstanding the Hastings prior use did not meet with commercial success.

Diversity of Opinion Below: No Other Opportunity to Present the Case.

4. That the McFeely patent in suit will expire in October, 1942, and there is no opportunity of securing a diversity of opinion with other Circuits, but there is a diversity of opinion in the United States Circuit Court of Appeals for the Sixth Circuit, his Honor, Judge Elwood Hamilton, having dissented from the majority opinion.

Public Importance.

5. That this case involves the payment of royalties or rentals to United Shoe Machinery Corporation by shoe manufacturers on more than 1200 machines and is, therefore, one of great public importance to the public and hundreds of shoe manufacturers upon whom the respondent levies tribute through royalties or rentals. The principle of extension of monopoly by the method employed in drafting these patents, if not corrected, will extend indefinitely the monopoly of patents of this class over the shoe industry.

PRAYER.

Wherefore, your petitioner respectfully prays that writ of certiorari be issued to the Circuit Court of Appeals for the Sixth Circuit to the end that this cause may be reviewed and determined by this Court in accordance with the principles of law heretofore announced by it; that the decree of the Circuit Court of Appeals for the Sixth Circuit be reversed as to the finding of validity of McFeely patent No. 1,558,737 of October 27, 1925; and that the petitioner be granted such other and further relief as may be proper.

THE WILLIAMS MANUFACTURING COMPANY,

By H. A. TOULMIN, JR.,

Attorney for Petitioner.

JAMES B. O'DONNELL,

H. A. TOULMIN,

H. A. TOULMIN, JR.,

ROWAN A. GREER,

Of Counsel.

BRIEF IN SUPPORT OF PETITION FOR WRIT OF CERTIORARI.

THE OPINIONS OF THE COURTS BELOW.

The opinion of the District Court is found on pages 477 to 485 Vol. 1 of the record. The opinion of the Circuit Court of Appeals (Circuit Judges Simons, Hamilton and Martin, Judge Simons writing and Judge Hamilton, dissenting) appears at pages 502 to 513, Vol. 1, of the record. This opinion of the Circuit Court of Appeals for the Sixth Circuit is not yet reported.

JURISDICTION.

The decree of the Circuit Court of Appeals was entered June 25, 1941 (R. 501, Vol. 1) and the opinion was filed June 27, 1941 (Ib. 502). The statute giving jurisdiction is 240-A of the Judicial Code (28 U. S. Code, Sec. 347). The judgment was rendered in a suit in equity brought under the patent statutes to determine the validity of Letters Patent of invention.

The cases believed to sustain jurisdiction are:

- Cities Service v. Dunlap*, 308 U. S. 208;
- Scriber Co. v. Cleveland Trust*, 305 U. S. 47;
- Mackay Radio & Telegraph Co. v. Radio Corp.*, 306 U. S. 86;
- Bassick v. Hollingshead*, 298 U. S. 415;
- Lincoln v. Stewart Warner Corp.*, 303 U. S. 545;
- Leitch Mfg. Co. v. Barber*, 302 U. S. 458;
- Altoona Public v. American Tri-Ergon*, 294 U. S. 477;
- Carbice v. American Patents*, 283 U. S. 27;
- DeForest Radio v. General Electric*, 283 U. S. 664.

STATEMENT OF THE CASE.

The foregoing petition contains a summary of the material facts necessary to an understanding of the reasons relied upon for the allowance of the writ as well as the statement of the questions involved in the case.

SPECIFICATION OF ERRORS.

The specification of errors herein relied upon are those reasons set forth in the petition as grounds for its allowance.

THE ISSUE.

The primary issue is **extension of monopoly** by repatenting an old combination to redominate a trade for another seventeen years, contrary to the principles announced by this Court in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner Corp.*, 303 U. S. 545.

SUMMARY OF THE ARGUMENT.

The argument is summarized in the "Reasons Relied Upon For The Allowance of The Writ" found in the petition. Briefly the argument is:

1. The decision of the Court of Appeals herein conflicts with the decisions of this Court in *Bassick v. Hollingshead*, 298 U. S. 415 and *Lincoln v. Stewart Warner*, 303 U. S. 545. The Court of Appeals declined to apply the principle announced by this Court in these cases to the effect that an old combination cannot be repatented by improving elements of the old combination. Respondent herein merely made adjustable certain parts of the old combination, which in no way affects the operation of the old combination. The adjustments are made before the old combination operates and only when a different size shoe is to be lasted, which is not often. Such conflict is ground for granting certiorari. *Cities Service v. Dunlap*, 308 U. S. 208.

2. The decision of the Court of Appeals is contrary to this Court's decision in *Grinnell v. Johnson*, 247 U. S. 426, against aggregating old adjusting features with an old combination.

3. The decision of the Court of Appeals in sustaining the second McFeely patent on the ground of commercial success is contrary to the decisions of this Court in *Smith v. James* and *Smith v. Hall*, 301 U. S. 216 to the effect that a prior machine is an anticipation even though it is not commercially successful. See also *Hildreth v. Mastoras*, 257 U. S. 27, 34.

4. The McFeely patent will expire in October, 1942 and there is no opportunity of securing a diversity of opinion in other Circuits. There is diversity of opinion among the Judges of the Court of Appeals in this case, because Judge Elwood Hamilton dissented.

5. There is great public importance in this case because Respondent has licensed 1200 of its machines. This is of great public importance because the tribute levied upon the manufacturers by Respondent is passed on to the large number of purchasers of shoes.

A R G U M E N T.

POINT I.

The McFeely patents are substantially identical except for three improved adjustments, themselves old in this art: the second McFeely patent in suit No. 1,558,737 has re-patented an old combination set forth and claimed in the first McFeely patent No. 1,129,881 and other patents of respondent.

The two McFeely patents, the expired patent No. 1,129,881 and the McFeely patent in suit No. 1,558,737, as will be seen from an examination of their drawings and specifications, are **substantially identical in construction, operation and result**. (R. Vol. 2, 266, 2.) The second McFeely patent says :

"This invention relates to lasting machines for use in the manufacture of boots and shoes, and is herein illustrated in its application to a machine for lasting

the heel ends, or the heel seats, of shoes, the drawings showing a machine of the same general type as that illustrated in United States Letters Patent No. 1,129,881 granted upon my application on March 2, 1915, in which type of machine it is one of the objects of the invention to effect improvements." (p. 1, ll. 12-22.)

The only differences claimed by respondent are the additions in the second McFeely patent to the first McFeely patent to make (a) the wipers or tackers, (b) the heel band, and (c) the hold-down adjustable so as to give the second McFeely patent greater flexibility in lasting a greater variety of sizes of shoes. (R. 420, Finding 29, Ib. 481, Ib. 511-12, Vol. 1.)

The District Court, whose findings were affirmed by the Circuit Court of Appeals, held:

"* * * that while the McFeely patent in suit No. 1,558,737, embraces many elements of the McFeely patent No. 1,129,881, the earlier McFeely patent lacked, so far as it relates to Claims 6 and 85, certain elements which prevented it from being commercially successful; that is to say, among others, it would not permit of a successful operation upon a range of shoe sizes; the operation of the tackers and wipers could not be controlled with accuracy; or in other words, adjusted as are the tackers and wipers in the machine covered by the patent in suit; and also, immediately before the tacking movement the wipers would be retracted partly to permit of the tacking and in so doing have a tendency to pull the upper from the insole, which would tend in some instances to and in many operations did make an imperfect job, if not damage the shoe. This was overcome in the machine covered by the patent in suit by the wipers moving in toward the shoe, holding the upper in place rather than pulling the upper away from the last, prior to the tacking as in the earlier McFeely patent." (R. Vol. 1, p. 483.)

The Court of Appeals said as to the first McFeely patent: "Although the machine successfully lasted shoes of

specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory." (R. 510, Vol. 1.)

The additions comprised, therefore, these three adjustments to make the second McFeely a more commercial machine. If they were novel, they should have been patented *per se*. The additions themselves, as hereinafter pointed out, were old in this art, used in similar combinations for heel seat lasting, and were substitutions within the skill of the art open to the public and no longer susceptible to exclusive monopoly by this respondent, whose patents thereon had expired. (R. Vol. 2, pp. 280, 440.)

A patentee cannot, by improving elements of an old combination, whose construction and operation is otherwise unchanged, in effect repatent the old combination for another seventeen years by reclaiming it with the improved elements substituted for the old elements or in improvement thereof. *Bassick v. Hollingshead*, 298 U. S. 415 and *Lincoln v. Stewart Warner Corp.*, 303 U. S. 545.

The McFeely patents relate to an automatic heel seat lasting machine for the purpose of "heel seat lasting," i.e., the turning over of leather of a shoe upper on the bottom of the insole and the tacking of the leather against such insole before the application of the heel to the shoe. Heel seat lasting is an accomplishment practiced by automatic and semi-automatic machinery in this art of more than sixty years. (Copeland 244, 714, etc., R. 114, Vol. 2.) The result of heel seat lasting of shoes of different sizes was accomplished by first McFeely patent No. 1,129,881, the Court of Appeals below finding that it "successfully lasted shoes of specific sizes." (R. 510, Vol. 1.)

According to respondent's claim as to the difference between the first McFeely and the second McFeely patents, there are **three adjustments found in the second McFeely**

not found in the first McFeely. The result of these adjustments was to make it possible to handle a greater number of different sizes and shapes of shoes, according to respondent's claim. These adjustments were first that of the heel band by which it was connected positively for fore and aft movement. This two-way, in and out adjustment *per se* in the second patent, was substituted for adjustable rubber band supports that moved the heel band in one direction only in the first McFeely patent. (Opinion of Circuit Court of Appeals, R. 511, Vol. 1.) The two-way adjustment of a heel band in the first McFeely was an old characteristic in the art as shown in the patents to Copeland, No. 244,714; Lombard, No. 542,445; Eaton, No. 596,323; Brock, No. 601,935; Plant, No. 958,280; Brock, No. 1,118,616; Pym, No. 1,368,968 and Keyes, No. 1,023,854, see Figure 10. (R. Vol. 2, pp. 114, 122, 134, 140, 222, 238, 440.)

The second adjustment was a predetermined one for the wipers to initially position them to accommodate different sizes of shoes. (Opinion of Circuit Court of Appeals, R. 511, Vol. 1.) This also was an adjustment common in this art in such patents as Pym, No. 1,368,968; Copeland, No. 244,714; Lombard, No. 524,445; Eaton, No. 596,323; Brock, No. 1,118,616 and Snow, No. 946,708. (R. Vol. 2, pp. 440, 114, 122, 134, 384, 172.)

The third adjustment (opinion of Circuit Court of Appeals, R. 511, Vol. 1), was the vertical movement of the hold-down, which also was, *per se*, old in respondent's expired Pym patent No. 1,368,968, formerly in this suit, and Keyes, No. 1,023,854. (R. Vol. 2, pp. 232, 440.)

In the present case the Court of Appeals of the Sixth Circuit found that these adjustments produced a new result, meaning apparently, "an improved" result, because, of course, the result of heel seat lasting was a very old one and had been for the last sixty years. Copeland, No. 244,714 and subsequent patents (R. Vol. 2, p. 114.)

The Court of Appeals below said:

"It is true that many of the features of the claims are old and that an organization, including wipers and tackers, was shown in somewhat primitive form in Copeland. It is also true that adjustability of elements, though not in the form shown in the first McFeely patent, is added by the patent in suit to the McFeely type laster, and that mere adjustability by common mechanical expedients may not, of itself, denote the presence of the quality of invention and merit the issue of a patent." (R. 511, Vol. 1.)

The adjustable features in the second McFeely do not in any way modify the lasting operation. **The adjustments are made by hand before the lasting operation starts.** (R. Vol. 1, p. 47, A. 3, Ib. 409-10, Ib. 69, A. 17, Ib. 368, XA: 312-315, Ib. 369, XA. 319.) The result of the lasting operation is exactly the same as in the first expired McFeely patent and in other prior art patents. (R. 15, Vol. 2, lines 19-23, p. 3, patent 1,558,737; Rec. 129, Vol. 2, XA. 1-15; Ib. 298-9; Ib. 300-5; Ib. 314-16; Ib. 318-321; Ib. 362-3, XA. 263-274; Ib. 394-5; Ib. 420.)

Petitioner's position is that the claims of the second McFeeley patent go to the old combination, which is expired, and include these adjustments as a part of the old combination in substitution for other adjusting mechanism in the first McFeely patent, thereby **in effect repatenting the old combination by reclaiming it with the improved elements substituted for the old elements**, as for instance, substituting the two-way adjusting mechanism for the heel band in the first McFeely patent for its heel band with the rubber cord supports.

The evil of the system of granting and sustaining patents for a repatented combination from which there has been removed a more or less uneconomical element and substituting an old element which is more effective, permits an endless extension of monopoly, and a permutation of the possible combinations so that the patents secured are

endless in number and never restricted in scope. Respondent in the case of the Hoyt patent in suit was held guilty of such extension of monopoly by the Circuit Court of Appeals herein. (R. 512-13, Vol. 1.) This practice enables an energetic Patent Department of a great corporation like that of respondent, through the sheer mass of such patents so secured by repatenting old monopolies, to make it impossible for any manufacturer of shoes to do other than to comply by rental of its machines and thereby pay tribute to such patents **without end to the tribute.**

In *Bassick v. Hollingshead*, 298 U. S. 415, this Court held that an old combination could not be repatented by improving one or more of the old elements. This Court said:

"It is plain that Gullborg invented improvements of two of the mechanical elements of an old combination consisting of grease pump, hose, hose-coupler, and a grease cup or pin fitting. First, he contrived an improved pin fitting. This he patented as such (No. 1,307,733.) Secondly, he invented an improved form of coupler to be attached to the end of the hose leading from the pump to the fitting. Instead of patenting this, as he did the pin fitting, he claimed a combination of pump, hose-coupler, and pin fitting, and embodied in the combination his improved form of coupler. (No. 1,307,734, the patent in suit; claims 1-6, 8 and 10.) He further claimed the combination between his patented pin fitting and any form of grease gun whether that claimed in his patent or unpatented and old in the art. (Claims 14 and 15.) **The question then is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other federal courts.**" (pp. 424-425.)

The Court of Appeals was reversed.

In *Lincoln v. Stewart Warner*, 303 U. S. 545, this Court also held the patent invalid because the improvement was in one part of an old combination.

“* * * The invention, if any, which Butler made was an improvement in what he styles in his specifications the ‘chuck’ and in his claim a ‘coupling member.’ It is not denied that multi-jawed chucks had been used in industry and as couplers in lubricating apparatus. Butler may have devised a patentable improvement in such a chuck in the respect that the multiple jaws in his device are closed over the nipple by the pressure of the grease, but we think he did no more than this. As we said of Gullborg in the Rogers case, having hit upon this improvement he did not patent it as such but attempted to claim it in combination with other old elements which performed no new function in his claimed combination. The patent is therefore void as claiming more than the applicant invented. The mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than that theretofore performed or produced by them, is not patentable invention.⁵ And the improvement of one part of an old combination gives no right to claim that improvement in combination with other old parts which perform no new function in the combination.⁶” (pp. 549, 550.)

The Court further said:

“* * * The function of a pump has always been to force a fluid or a grease through a conduit. The fact that this function of the pump is utilized in Butler’s improved form of coupler not only to convey the lubricant to the bearing but to operate the jaws of the chuck does not alter the function of the pump. The invention, if any, lies in the improvement in the coupling device alone.” (p. 551.)

“We conclude that Butler’s effort, by the use of a combination claim, to extend the monopoly of his invention of an improved form of chuck or coupler to old parts or elements having no new function when operated in connection with the coupler renders the claim void.” (p. 552.)

The heel seat laster in the second McFeely patent operates exactly the same as the heel seat laster in the first McFeely heel seat laster. The addition of the ad-

justable features, taken from the old art, does not in any way affect the old heel seat lasting mechanism of the first McFeely patent. The result obtained by both is the same. The adjustments are made solely for the purpose of accommodating different sizes of shoes and are used only when a different size shoe is to be lasted.

McFeely's effort in his second patent, by the use of a combination claim, to extend the monopoly of his invention of an improved form of adjustment (taken from the prior art) to old parts or elements (the first McFeely patent) having no new function when operated in connection with the coupler renders the claims void.

The Court of Appeals erred in not recognizing that the facts in the present case are exactly the same as in the "*Bassick*" and the "*Lincoln*" cases, *supra*; and in not holding the claims invalid because they cover an old combination with adjustments added which do not operate when the heel seat lasting operation is effected, and which operate only when the size of the shoes is to be changed and before any different sized shoe is lasted.

It misapplied the principles laid down by this Court as evidenced by the following statement from its opinion (R. 511, Vol. 1):

"There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element, as in *Bassick v. Hollingshead*, 298 U. S. 415, or *Kodel Elec. Co. v. Warren Clock Co.*, 62 Fed. (2d) 692 (C. C. A. 6)."

We submit that the doctrine against repatenting an old combination by substituting old elements or even adding old elements, **is not limited to the conditions just specified in the above quotation.** This Court's decision prohibits remonopolizing that which has already been dedicated to the public by expiration of a prior patent, whether the latter effort to repatent involves a matter of substitution of elements or additions thereto. To so limit

the doctrine of the *Bassick* and *Lincoln* cases, as did the Court of Appeals below, would make them substantially ineffective to prevent the abuses from extension of monopoly in most cases.

The failure of the Court of Appeals to follow the *Bassick* and *Lincoln* cases is ground for certiorari. This Court granted certiorari in *Cities Service v. Dunlap*, 308 U. S. 208, saying:

"This cause is here in order that we may decide whether the Circuit Court of Appeals wrongly declined to follow the rule of the Texas Courts prescribing how and by whom the facts should be shown where one party to a contest concerning ownership of land claims the legal title as bona fide purchaser."

This Court of Appeals was accordingly reversed because it did not follow the established rule.

POINT II.

Aggregation: Another Form of an Attempt to Repatent Expired Old Combinations.

When an attempt is made to patent a combination of two or more elements or old combinations, it is another form of attempted monopoly extension over what has gone into the public domain. Engineering contributions in the common store of knowledge of an industry **cannot be rededicated to monopoly without the justification of a new function or a new result from the combination**; without such new function or new result it is aggregation and the associated mechanisms still stay within the public domain. Mere improvements in result or economy of greater success cannot revitalize an aggregation into an invention.

All that McFeely did in the second patent was to add to the expired first McFeely patent the prior art adjustments which were old and public property. The operation of the adjustments and the heel seat lasting are not

simultaneous, as in the *Grinnell* case, but are entirely separate and are independent of one another. There is no true cooperation to make a patentable combination. No new and useful result is produced by the second McFeely patent from the "cooperating action of the elements." It follows that the McFeely patent is merely for an aggregation of old combinations and invalid.

In the *Grinnell v. Johnson* case, 247 U. S. 426, this Court said:

"The question is, does this bringing together of old elements accomplishing the purposes stated amount to that combination which is invention within the meaning of the patent law; or does the gearing device, thus applied and used, show only an aggregation of old elements performing well-known functions, producing no novel and useful result entitling the aggregation to the protection of a patent?" (pp. 431-2.)

After quoting from authorities as to aggregation, this Court said:

"Applying the rule thus authoritatively settled by this court, we think no invention is shown in assembling these old elements for the purposes declared. **No new function is 'evolved from this combination'; the new result, so far as one is achieved, is only that which arises from the well-known operation of each one of the elements.**" (p. 433.)

The Court of Appeals of the Sixth Circuit erred in sustaining the second McFeely patent because of additions to the expired first McFeely patent of prior art adjustments to make the machine more versatile and in holding that the rule of this Court against extending a patent monopoly applies only when the improvement is in quantity or quality of the product. This ruling is contrary to *Grinnell v. Johnson, supra*, in which this Court held that convenience, economy and superiority do not make an aggregation patentable. This Court said:

“* * * Phillips may have produced a more convenient and economical mechanism than others who preceded him, but superiority does not make an aggregation patentable. *Specialty Manufacturing Co. v. Fenton Metallic Manufacturing Co., supra.* The assemblage of the old elements, and their operation in the manner indicated, may save time, and the mechanism may meet with a readier sale than other similar devices, but these things may result from mechanical skill and commercial enterprise, and do not necessarily involve invention.” (p. 434.)

In *Specialty Mfg. Co. v. Fenton*, 174 U. S. 492, 498, *supra*, this Court said:

“Hoffman may have succeeded in producing a shelf more convenient and more salable than any which preceded it, but he has done it principally, if not wholly, by the exercise of mechanical skill.”

This Court did not limit the restriction against extending the monopoly by improving one part of an old combination to cases in which the second patent covers a mere improvement in quantity or quality of the product. The true rule as set forth in *Bassick v. Hollingshead*, 298 U. S. 415, is that, although an element is improved in an old construction, the patent is invalid. As this Court said:

“The question is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other Federal Courts.” (p. 425.)

That is exactly what McFeely has done. McFeely took the added adjustments from the prior art. This does not render the combination patentable; the approval of such a course, by the Court of Appeals below, makes this Court's decisions ineffective in applying the applicable rule.

POINT III.

**Commercial Success is not Essential to
Anticipation by a Prior Patent.**

The Court of Appeals below founded its decision on the fact that as between the first McFeely patent and the second, **the second was more successful commercially than the first.** It said that one machine was built in accordance with the first McFeely and:

“Although the machine successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory.” (R. 510, Vol. 1.)

This we submit is contrary to the doctrine established by this Court in *Smith v. James* and *Smith v. Hall*, 301 U. S. 216, and numerous other cases. Anticipation cannot be decided on the basis of comparative commercial success between the anticipating structure and the structure of the patent in suit. Even though the anticipating patent structure is not commercially successful, it is still an anticipation if it has already disclosed the principles of the invention to the public. Likewise, reliance upon commercial success is an unsafe ground to sustain a broad monopoly, and is only resorted to in cases of doubt; but even then such proof can be no substitution for a lack of invention over the prior art as in this case.

Textile Machine Works v. Louis Hirsch Textile Machines, Inc., 302 U. S. 490-498-499;

Paramount Publix Corp. v. American Tri-Ergon Corp., 294 U. S. 464-474;

Altoona Publix Theatres, Inc. v. American Tri-Ergon Corp., et al., 294 U. S. 477-486;

DeForest Radio Co. v. General Electric Co., 283 U. S. 664;

Grant v. Walter, 148 U. S. 547-556.

The Court of Appeals founded its decision on the contrary principle to that established by this Court, that is, that even if the anticipating structure operated successfully, while the machine of the patent in suit was more commercially successful, then there could be no anticipation. This Court, in *Smith v. James, supra*, however, held that commercial success is unnecessary. In that case this Court said as to the Hastings prior use:

"It is immaterial that his structure for using the method was neither the best possible nor as skilfully designed or used as that later employed by Smith. *Pickering v. McCullough*, 104 U. S. 310, 319; cf. *Telephone cases*, 126 U. S. 1, 531, 536." (p. 232.)

With reference to the Hastings Brooklyn and Muskogee prior uses, this Court said:

"* * * the fact that both incubators functioned, are convincing evidence that Hastings knew and used in appropriate combination, both in Brooklyn and in Muskogee, the essential elements of the Smith claim." (pp. 232-3.)

"He knew the method and used it in a device capable of employing it. In such circumstances want of commercial success, which the record suggests may have been due to lack of technical and business skill, is not an indication that there was no prior use." (p. 233.)

The first McFeely patent lasted heels exactly the same as the second McFeely. The only difference was that the second McFeely could handle more sizes than the first McFeely, but the lasting operation was identical in both. It is, of course, immaterial that the second McFeely did a more perfect job. The first McFeely, therefore, is an anticipation of the second McFeely.

In *Hildreth v. Mastoras*, 257 U. S. 27, 34, this Court said:

"It is not necessary, in order to sustain a generic patent, to show that the device is a commercial success. The machine patented may be imperfect in its opera-

tion; but if it embodies the generic principle, and works, that is, if it actually and mechanically performs, though only in a crude way, the important function by which it makes the substantial change claimed for it in the art, it is enough."

As between the first McFeely and the second McFeely the first is generic and the Court of Appeals found that it "successfully lasted shoes" but not in as wide a range of commercial sizes.

Therefore, the Court of Appeals erred in disregarding this Court's decision to the effect that commercial success is not a necessary factor to make an anticipating machine.

POINT IV.

Diversity of Opinion.

The second McFeely patent will expire in October, 1942.

There has been no opportunity and none is likely to present itself, to secure diversity of opinion on the validity of the McFeely patent No. 1,558,737. Judge Elwood Hamilton, however, dissented from the opinion of the Circuit Court of Appeals for the Sixth Circuit without writing an opinion.

While there is no conflict of decision between the Circuits, as to the McFeely patent in suit, but only a conflict of opinion between the Judges of the Sixth Circuit Court of Appeals, yet the decision below conflicts with principles established by this Court, and for that reason certiorari is sought. *Ansaldo v. Rheinstrom*, 294 U. S. 494; *U. S. v. Constantine*, 296 U. S. 287, 290; *Paramount Publix Corp. v. American Tri-Ergon Corp.*, 294 U. S. 464; *Altoona Theatres v. American Tri-Ergon Corporation*, 294 U. S. 477; *Mechanics v. Culhane*, 299 U. S. 51, 53; *Schriber-Schroth Co. v. Cleveland Trust Co.*, 305 U. S. 47-61; *Cities Service v. Dunlap*, 308 U. S. 208; *Mackay Radio v. Radio Corp.*, 306 U. S. 86; *Bassick v. Hollingshead*, 298 U. S.

415; *Lincoln v. Stewart Warner Corp.*, 303 U. S. 545; *Leitch v. Barber*, 302 U. S. 458; *Carbice v. American Patents*, 283 U. S. 27; *DeForest Radio v. General Electric*, 283 U. S. 664.

POINT V.

Public Importance.

1200 of the machines involved in the McFeely patents, are under lease by the respondent. (Vol. 1, R. 399, 483.) Automatic heel seat lasting is one of the fundamental features of shoe making. The tribute upon the shoe industry which must inevitably be reflected in the cost of shoes, thereby very gravely affects the public interest. Only one with the clearest title to monopoly should have it under such circumstances.

Respondent already stands condemned by the Circuit Court of Appeals for the Sixth Circuit for attempting to extend its monopoly on this same mechanism in the Hoyt patent in suit No. 1,508,394. (R. 513, Vol. 1.) The action of respondent in abandoning the application in the United States Patent Office of the second McFeely patent in suit for ten months and then reviving it, is another phase of what was heretofore the prevalent practice of extending a monopoly. This Court stopped one phase of such a practice in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner Corp.*, 303 U. S. 545. Congress has recently rendered illegal the practice of extending monopoly by abandonment and revival. U. S. C. A., Title 35, Sec. 41, provides that a patent shall be withheld unless the final fee is paid within six months after the allowance of the application except that the Commissioner in his discretion may receive the final fee during the year following the six month period.

The large number of patents of this respondent, many of which are in this record, make it essential to the public interest that this vast monopoly over the shoe industry be limited strictly in accordance with the principles announced by this Court.

We earnestly submit that this Court should order in this case to prevent this serious departure from the principles of the law announced by it.

Respectfully submitted,

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In the Supreme Court of the United States

OCTOBER TERM, 1941.

No. 332.

THE WILLIAMS MANUFACTURING COMPANY,
Petitioner,

vs.

UNITED SHOE MACHINERY CORPORATION,
Respondent.

REPLY BRIEF FOR PETITIONER
ON PETITION FOR CERTIORARI.

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Petitioner,

vs.

UNITED SHOE MACHINERY CORPORATION,

Respondent.

REPLY BRIEF FOR PETITIONER ON PETITION FOR CERTIORARI.

LAW ISSUES HERE ONLY:

NO RETRIAL OF THE FACTS SOUGHT.

Petitioner desires no retrial on the facts and would not have such retrial if it could. The facts are plain and settled: petitioner does seek a proper application of the law *on extension of monopoly*, based upon the facts as found by the Courts below. Petitioner's issue with the Courts below is one solely of law as to the application of the decisions of this Court in *Bassick v. Hollingshead*, 298 U. S. 415; and *Lincoln v. Stewart-Warner*, 303 U. S. 545.

We likewise agree with respondent that this is no new or doubtful question of law, but a failure to apply the applicable decisions of this Court to an established state of facts.

Petitioner's assertion that the second McFeely patent is a repatenting of the subject matter of the first McFeely patent (now expired) under the facts as established by the Courts below, is purely a question of law, there being no dispute about the facts.

This is a question, therefore, of a construction of patents, which is a matter of law. *Powder Co. v. Powder Works*, 98 U. S. 126, 134; *Singer v. Cramer*, 192 U. S. 265; *Sanitary Refrigerator v. Winters*, 280 U. S. 30; *Hurin v. Electric Vacuum Cleaner*, 298 F. 76 (C. C. A. 6); *Budd v. Wilson*, 21 F. 2d 803 (C. C. A. 6); *Motor Wheel v. Rubsam*, 92 F. 2d 129, 131 (C. C. A. 6), certiorari denied 304 U. S. 560; *Baldwin Rubber v. Paine & Williams*, 99 F. 2d 1, 3 (C. C. A. 6).

Likewise, what is or is not aggregation, is a construction of a patent and is a matter of law. See cases cited above and *Grinnell v. Johnson*, 247 U. S. 426.

Therefore, in view of the foregoing, it will be seen that respondent is in error in stating that the issue is one of fact: the only issues are those of law.

PATENT WILL NOT EXPIRE BEFORE THE DECISION OF THIS COURT.

In *Lincoln Engineering v. Stewart-Warner*, 302 U. S. 682, certiorari granted January 3, 1938, a case involving the same question of repatenting an old combination by improving an element, this Court heard the case on its merits March 10, 1938, and decided it March 28, 1938 (303 U. S. 545), a little less than three months after the certiorari was granted. On that basis a good part of a year would be left in this case and that time would be of great public importance to those operating under license from respondent.

MATTERS NOT RAISED HERE.

We note in passing, on page 2 of respondent's brief, reference to the commercial construction of the plaintiff [respondent] having been copied by the defendant [petitioner], but obviously, as a matter of law, the issue can only be whether the petitioner's construction fell within the claims of respondent's patent. Whether it did or did not is not an issue we are raising here: petitioner is only raising the issue of the law questions set forth in the peti-

tion of which the extension of monopoly on the established state of facts is a primary consideration.

Of course, it is not proper to compare constructions to make out infringement. *Magnavox v. Hart & Reno*, 73 F. 2d 433, 445, 446 (C. C. A. 9); *Grand Rapids v. Weber*, 38 F. 2d 730, 731 (C. C. A. 9), certiorari denied 281 U. S. 767; *Hubbell v. General Electric*, 267 F. 564 (C. C. A. 2).

PUBLIC INTEREST.

We are relying on Section 5(b) of Rule 38 of this Court to the effect that where a Court below does not carry out the plain decision of this Court and follow the laws established by it, this is ground for certiorari in order to insure uniformity of the application of legal principles throughout the country. See also *Cities Service v. Dunlap*, 308 U. S. 208, 209.

The statement of respondent that 1200 machines under lease are not affected by patent questions; and, therefore, this case cannot be of public importance, **is negatived by the record and decision of the Court below, which put great emphasis upon this evidence introduced by the respondent as evidence of invention and commercial success of these 1200 machines.** We are at a loss to understand why this matter could be of such great importance in the Courts below and as adopted by the Courts below, and suddenly in this Court become of no importance either patent wise or as a matter of public importance.

We repeat the issue to be determined in this Court is one of law only on an established state of facts.

Respectfully,

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In the Supreme Court of the United States

OCTOBER TERM, 1941.

No. 332.

THE WILLIAMS MANUFACTURING COMPANY,
Defendant-Petitioner,

v.

UNITED SHOE MACHINERY CORPORATION,
Plaintiff-Respondent,

BRIEF FOR DEFENDANT-PETITIONER.

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BRIEF FOR DEFENDANT-PETITIONER.

THE OPINIONS BELOW.

This cause is before this Court upon the petition of defendant-petitioner, The Williams Manufacturing Company, by reason of a writ of certiorari to review the decision (121 F. (2d) 273, R. Vol. I, p. 503) and decree (R. Vol. I, p. 501) of the United States Circuit Court of Appeals for the Sixth Circuit, directing that the decree (R. Vol. I, p. 485) of the United States District Court for the Southern District of Ohio, holding the McFeely patent 1,558,737, in suit, valid as to claims 6, 23, 42, 85 and 91, be affirmed. The findings of fact, conclusions of law and opinion of the District Court were filed July 21, 1939, and are printed at pages 477-485 of Vol. I, of the Record herein; and the decision of the District Court is reported in 29 F. S. 1015. The decree of the District Court was filed July 21, 1939. The Court of Appeals opinion (121 F. (2d) R. Vol. I, p. 502), was filed June 27, 1941. The decree of the Court of Appeals (R. Vol. I) was entered June 25, 1941.

JURISDICTION.

The certiorari petition was filed on or about August 6, 1941, and the writ granted on or about October 20, 1941. This case is here on such writ of certiorari under the provisions of Sec. 240-A of the Judicial Code (28 U. S. Sec. 347).

THE ISSUE.

The primary issue is **extension of monopoly*** by re-patenting an old combination to redominate a trade for another seventeen years, contrary to the principles announced by this Court in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner Corp.*, 303 U. S. 545.

ERRORS ASSIGNED AND TO BE ARGUED.

1. **Extension of Expired Monopoly.** That the Circuit Court of Appeals for the Sixth Circuit, in holding the second McFeely patent No. 1,558,737 (R. Vol. II, p. 2) valid over the prior invention and patent of McFeely, No. 1,129,881 (R. Vol. II, p. 266, expired March 2, 1932), has rendered a decision in conflict with the principles of the decisions of this Court in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner*, 303 U. S. 545, prohibiting the extension of monopoly of an expired patent by the substitution of mechanical details, already old in the art, in a second patent in an identical basic mechanism as in the first expired patent,—a mere substitution or improvement of parts in an old combination.

2. **Aggregation: Extension of Monopoly.** That the Circuit Court of Appeals for the Sixth Circuit in upholding the validity of McFeely patent No. 1,558,737, which merely aggregates old adjusting features with an old combination, has rendered a decision in conflict with the prin-

* Where not otherwise stated, emphasis ours.

principles applied in such cases as *Grinnell v. Johnson*, 247 U. S. 426.

3. Commercial Success of Prior Art Unnecessary for Anticipation. That the Circuit Court of Appeals for the Sixth Circuit in upholding the validity of McFeely patent No. 1,558,737, has rendered a decision in conflict with the decision of this Court and the principles therein as applied in such cases as *Smith v. James*, and *Smith v. Hall*, 301 U. S. 216, to the effect that a prior machine constitutes anticipation, even though it is commercially unsuccessful and is incapable of operating to the fullest range of capacity to adopt it for commercial operation. The decision of the Court of Appeals herein is in conflict with the principles announced in the decision of this Court in *Smith v. James*, *supra*, in which the Hastings prior use was held to anticipate the Smith patent notwithstanding the Hastings prior use did not meet with commercial success.

4. Public Importance: Effect of Remonopoly on the Public Interest. That this case involves the payment of royalties or rentals to United Shoe Machinery Corporation by shoe manufacturers on more than 1200 machines and is, therefore, one of great importance to the public and hundreds of shoe manufacturers upon whom the respondent levies tribute through royalties or rentals. The principle of extension of monopoly by the method employed in drafting these patents, if not corrected, will extend indefinitely the monopoly of patents of this class over the shoe industry.

SUMMARY OF ARGUMENT AND STATEMENT OF FACTS.

The primary issue here is the extent of the right to repatent an expired monopoly affecting the entire shoe industry. This has resulted in the levying of a heavy tax upon the public for using an expired combination. The ex-

tension of monopoly of the first McFeely patent by the second McFeely patent in suit has been effected by claiming three preliminary adjustments in combination with the old heel seat lasting machine of the first patent.

Petitioner was defendant in the District Court, where the respondent prevailed on both patents in suit, the District Court holding the two patents in suit valid and infringed. (R. Vol. I, pp. 477, 485, 29 F. S. 1015.) The Circuit Court of Appeals for the Sixth Circuit reversed the District Court, in part, holding the McFeely patent No. 1,558,737, valid and infringed and the Hoyt patent No. 1,508,394, invalid for unlawful extension of monopoly. Judge Elwood Hamilton of that Court dissented. (R. Vol. I, pp. 501, 502, 122 F. (2d) 273.) The primary issue in both courts was the extension of monopoly by the respondent, the United Shoe Machinery Corporation, in repatenting old expired combinations of its expired patents in new patents in which adjustments, old *per se* in the art, were substituted in old combinations and were reclaimed in such broad combinations present in the old basic machine covered by respondent's own expired patents.

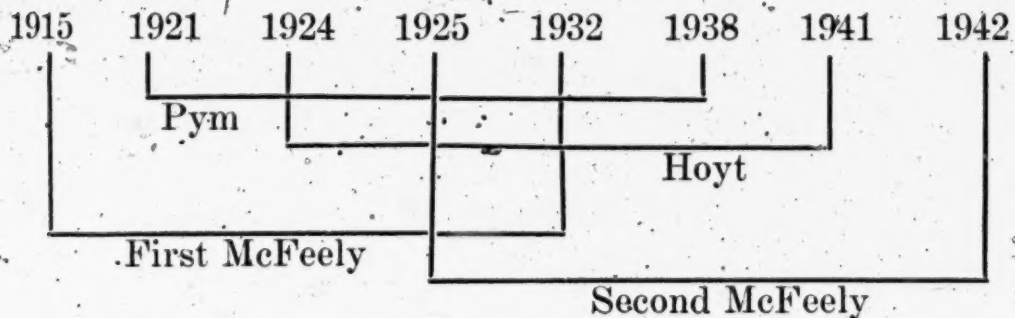
This extension of monopoly was effected in this manner. The Bill of Complaint (R. Vol. I, p. 1) was originally founded upon three patents: Pym patent No. 1,368,968, of February 15, 1921, expiring February 15, 1938, covering bed lasters without the superimposed automatic tackers (R. Vol. II, p. 440); the second¹ McFeely patent No. 1,558,737, granted October 27, 1925, expiring October 27, 1942, covering bed lasters in combination with automatic tackers (R. Vol. II, p. 2); and Hoyt patent No. 1,508,394, granted September 16, 1924, expiring September 16, 1941, for another improved form of combined bed laster and automatic tackers. (R. Vol. II, p. 42.) Respondent withdrew its

¹ The first McFeely patent No. 1,129,881 is the primary anticipatory reference whose expired monopoly is repatented by the second McFeely patent No. 1,558,737 in suit.

suit on the expired Pym patent before trial. (R. Vol. I, p. 486.)

The second McFeely patent in suit was abandoned by its owner, the United Shoe Machinery Corporation, in the Patent Office on the 15th day of July, 1921, and renewed on the 24th day of May, 1922. (Def. Ex. F-2.) If it had not been so abandoned, it would have issued and now be expired.

The pattern for the extension of monopoly by overlapping patents on heel seat lasting machines of the respondent is shown in the following diagram of dates of issue and expiration of patents:



The United Shoe Machinery Corporation, respondent, owned the principal prior patent, the first McFeely patent No. 1,129,881, issued March 2, 1915, expiring March 2, 1932. (R. Vol. II, pp. 268, 283.) This patent covered the complete combination of a bed laster and automatic tackers for the heel seat lasting of shoes. It is practically identical with the second McFeely patent except for the substitution in the second patent of modified forms of the same preliminary adjustments as in the first patent. The machine of the first patent was built by the United Shoe Machinery Corporation and placed in the plant of the Victor Shoe Company, where it operated under commercial conditions successfully, lasting shoes of various sizes, and was acclaimed before the United States Patent Office, by affidavit from the employees of the United Shoe Machinery Cor-

poration, including an affidavit of McFeely* himself, as a pioneer advance, successful commercially, and the first McFeely patent was granted accordingly. (R. Vol. I, pp. 471-6, filewrapper physical Exhibit—Def. Ex. H-2.)

In the District Court the respondent, United Shoe Machinery Corporation, took the position that the machine of the first McFeely patent had never been built and was not a commercial machine. And that the improvements in the second McFeely patent were the difference between failure and success. (R. Vol. I, p. 396, etc.) This proof was promptly challenged by the petitioner who produced, as soon after the trial as it could make an investigation and before the decision of the District Court and before argument, the certified copy of the filewrapper of the First McFeely patent, containing affidavits of respondent's employees, filed in the United States Patent Office, swearing that the machine of the first McFeely patent had been successfully and commercially used on **various sizes of shoes**. (Opinion of Court of Appeals, R. Vol. I, pp. 509-10.) Respondent then filed an affidavit with the District Court admitting the truth as to the commercial operation of the machine made in accordance with the first McFeely patent. (R. Vol. I, pp. 475-6.) The District Court rejected this evidence as being offered too late, refusing to consider it. (R. Vol. I, pp. 478-9.) The Circuit Court of Appeals for the Sixth Circuit gave this evidence consideration, saying: **"Although the machine (first McFeely) successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory."** (R. Vol. I, pp. 509-10.)

The differences claimed by respondent as to the second McFeely patent over the first to enable the second machine to operate on a greater range of sizes are:

* It was shown in the record that prior to the bringing of this action, that McFeely had died, and as a consequence, it was impossible to have him testify in this case.

(a) **Sliding heel band adjustment** before the lasting operation for the in and out movement of the shoe. (Old in prior art patents, R. Vol. II, pp. 114, 122, 134, 172, 384, 440.)

(b) **Means for preliminary adjustment of the wipers or tackers** before the lasting operation to accommodate a greater variety of sizes of shoes. (Old in prior art patents, R. Vol. II, pp. 114, 122, 134, 140, 222, 238, 240.)

(c) **Means for adjusting the amount of vertical movement of the hold-down** for the adjustment of the height of the shoe in the machine, before the lasting operation. (Old in prior art patents, R. Vol. II, pp. 232, 440.)

These three adjustments are old *per se* in this art and have been used in numerous heel seat lasting machines shown in the above expired patents.

Such adjustments do not in any way affect the operation of the other elements in the claims, for which reason the claims are also void as aggregations. The adjustments may or may not be used; and if used, are always operated **before** the lasting machine starts operating. That these three adjustments are added features to the old combinations in the claims is emphasized by the findings of fact filed by plaintiff-respondent, in the District Court and adopted by that Court. In Finding 4 (R. Vol. I, p. 478); it is stated that the McFeely "claims in suit are directed **specifically** to certain features of construction which render the machine capable of operation on a wide range of sizes and shapes of shoes." This, of course, refers to the three adjustments mentioned above. In finding 5 (R. Vol. I, p. 478) special reference is made to the "preliminary manual adjustment" of the tacker-wiper claims 6 and 85. In finding 6 (R. Vol. I, p. 478) special reference is made to the "sliding heel band adjustment" of claims 23 and 91. In finding 7 (R. Vol. I, p. 478) points out that the machine

set forth in claim 42² has manually adjustable means for varying the amount of vertical movement of the hold-down.

The Decision of the Circuit Court of Appeals.

The Circuit Court of Appeals (Vol. I, p. 502, and reported in 121 F. (2d) 273), followed the decision of the District Court in sustaining the second McFeely patent as valid and infringed. It failed to follow this Court's doctrine on extension of monopoly, as laid down by this Court in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner*, 303 U. S. 545. It reversed the District Court as to the Hoyt patent for extension of monopoly. Judge Elwood Hamilton of the Circuit Court of Appeals dissented without a dissenting opinion.

THE FIRST AND SECOND McFEELY PATENTS COMPARED.

The almost complete identity between the machines of these two patents is the factual basis for claiming invalidity of the second McFeely patent. The claimed differences by respondent rest in (a) improved adjustments for the vertical hold-down; (b) the predetermined positioning of the wiper plates in advance of wiping, and (c) the in and out adjustment of the heel band which grasps the heel of the shoe to hold it during lasting, **all of such adjustments being for the purpose of accommodating the machine to different sizes and shapes of shoes.** It is immaterial whether such adjustments were mere substitutions of one adjustment for another already old in the art, or the adjustments themselves were *per se* new and better. In any event, there is no excuse to reclaim the old heel seat lasting machine by either substituting one adjustment for another or adding an improved adjustment. To permit this means there would be no end of monopoly—no date when a patent on the old combination expired. In Appendix B we have quoted the claims in issue, printing in black type the ad-

justments which have been inserted in each claim to the sixty year old combination of wiper plates, means to move them, tackers and means to support the last and shoe in a heel clamp.

While the machinery is complicated in heel seat lasting machines yet the functions are simple. The heel band must be kept in close engagement with the heel by moving it in and out by pressing it on the sides and on the corners or bight of the band while the back of the band must be supported. The wipers must wipe back and forth to break down the leather over the bottom of the sole; and then the wipers must be withdrawn to permit the tacking unless the tacking is done through the wipers. **In order to adjust for** different sizes of shoes, shapes of lasts, and rights and lefts, it has been necessary from the very first machines to make predetermined adjustment of the wipers with or without tackers prior to the wiping and tacking operation to accommodate different sizes of shoes. It is no recent discovery that you must adjust any machine to fit it to different shoe sizes, lasts and rights and lefts of shoes as we have always had such variations. The First McFeely patent says:

Improvements in Production and Quality:

“By the use of this machine the temporary securing of the parts of the upper in assembled relation is rendered unnecessary as the lasting is effected while the machine holds the parts in proper assembled relation so that **an important saving of time and expense is effected and a greatly improved quality of work is obtained** by performing on this machine operations heretofore separately performed by different machines as distinct steps in the manufacture of the shoe.” (p. 1, ll. 49-60.)

Automatic:

“Another very important feature of this invention consists in **automatically operating heel seat lasting**

mechanism, with or without heel seat tacking mechanism which is also operated automatically." (p. 1, ll. 75-9.)

Hold-Down Adjustment: Prevention of Drag Back of Leather:

"Novel features of this invention will be found * * * in the provision for movement of the shoe so prepared backwardly into the heel embracing band of the lasting mechanism and the actuation of that band further to conform the upper materials to the contour of the heel portion of the last while the upper is so held under strain; in crimping or overwiping mechanism constructed and arranged to adapt itself to the shape of the last; in automatic operating mechanism by which overwiping mechanism is caused to act repeatedly on the same portion of the shoe; in provision for automatically changing the relative altitudes of the wipers and the shoe during the lasting operation; in the gang tacking mechanism by which the heel seat portion of the shoe is fastened; * * *." (p. 1, ll. 80-105.)

Heel Band Adjustments for Sizes:

"The end portions of the cords are bent outwardly over the swiveled heads 51 of blocks 52, pivoted upon the front arms of angle levers 54, and are attached to separate springs 55 which are **independently adjustable** by threaded anchors 56. A lining 58 of leather, rubber, felt or other suitable material is arranged within the bands 50 and distributes the pressure of the bands without interfering with their relative conforming movement to adapt them to the contour of each last when they are put under tension by the actuation of the levers 54." (p. 4, ll. 7-19.)

"A back stop 69 is adjustably mounted in position to limit the backward movement of the shoe into the elastic heel band which is effected by the connection to the jack post through the rod 43. This insures a predetermined positioning of the shoe lengthwise with relation to the operating parts of the machine. The back stop is forked to center the shoe laterally independently of the band and thus assist in positioning the shoe later-

ally with relation to the lasting and tacking mechanism." (p. 4, ll. 67-79.)

The purpose of this adjustment for different sizes is stated as follows:*

"In Fig. 18 the back stop is shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 having marked on it graduations indicating the proper adjustment **FOR DIFFERENT SIZES**. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes." (p. 4, ll. 79-88.)

This is particularly significant as later it will be noted that it was claimed at the trial by the plaintiff that the second McFeely was the first patent adaptable to different sizes of shoes and the first McFeely patent was not so adaptable. Later this was changed to a claim of a full range of sizes *after* the first McFeely filewrapper was produced.

Predetermined Wiper Adjustment.

The adjustment of the wiper in advance of its movement in order to bring about a predetermined adjustment for a predetermined movement is described as follows in the first McFeely Patent:

"This arm 83 has a yielding connection with the wiper plate 72 provided by the following arrangement: The arm 83 has a beveled end face which abuts against a similar face on a displaceable member 84 that is pivoted to a slide 85 and by which the wiper 72 is

* The broad combination with adjustments was even claimed in the first McFeely patent. See such claims as claim 167, which reads:

"A lasting machine having in combination, lasting means, a back stop to position the shoe and means to adjust the back stop **for shoes of different sizes including provision for indicating the correct adjustment for particular sizes.**"

actuated through the stud 840 and sub-slide 850. The member 84 has a beveled upper face at 86 upon which rests a beveled plunger 87 carried in the slide 85 and pressed upon by a heavy spring 88, see Figs. 2 and 13. The spring plunger maintains the members 83, 84 normally in the relation shown in Fig. 13, but permits the member 84 to turn and the movement of the wiper 72 to cease when resistance to such movement overbalances the tension of the spring 88. **Normally however the wiper will overcome any resistance offered by the work and complete its stroke into predetermined position over the last bottom to wipe the upper into position to be tacked.**" (p. 5, ll. 2 to 24.)

The movement of the wipers, after this setting of the predetermined adjustment of the spring 88, to adapt them to different sizes of shoes and rights and left's, is described thus:

"Simultaneously with this forward movement motion is transmitted through the angle levers 90 and the described, independently yielding, connections to close the side wipers and the corner wipers or links 71 inwardly over the heel seat, thus gathering the upper inwardly in substantially radial lines over the heel seat. The provision for effecting the forward movement and the inward movement from each side of the shoe **through independently yielding connections permits the wiping or breaking down means to adapt or conform itself to the contour of each shoe** and this is facilitated by the flexible connection 71 between the plates 70, 72, which act at the ends and back of the heel seat. **The independently yielding connections also facilitate the adaptation of the wipers to the shape and position of right and left shoes which differ greatly when made on crooked lasts.**" (p. 5, ll. 91-111.)

The first McFeely patent supported the last and shoe in the inverted position on the (yellow)* jack/shaft. To

* See patent drawings in Appendix A, comparing the McFeely patents. The colors identify the same parts.

determine the vertical position of the shoe, the first McFeely provided an adjustable (blue) hold-down. This was adjusted through the laterally adjustable cam wedge 100 controlled by the set screw 104. During the operation of lasting, the last and shoe was first held in a lower position while the first wiping operation took place; and it was then elevated to a higher position for the final wiping operation.

This is described in the patent as follows:

“It is intended that the **first or essentially breaking down advance shall take place with the shoe in a lower position than the second** or wiping in and ironing down movement. Accordingly, means for controlling the vertical position of the shoe is provided and is connected with **means for changing that vertical position** automatically between the two actuations of the upper overworking means * * *.” (p. 5, ll. 124-130; p. 6, ll. 1-3. Also see p. 6, ll. 23-35.)

The Court of Appeals was under the impression that the second McFeely was the first to provide means of preventing the wipers from dragging the leather backwardly during their movements back and forth over the leather of the heel to bend the leather down. (R. Vol. II, p. 268.) This is not correct, as will be seen from the following as to the first McFeely patent where this idea was described and even claimed.

In order to prevent the wipers from dragging the leather back, mechanism was provided, plus the adjustable hold-down, to so position the shoe vertically as to prevent this. The patentee saying:

“This is to depress the shoe from the wipers and to relieve the pressure of the wipers and **prevent them from dragging over the lasted and tacked upper in their final retraction.**” (First McFeely, p. 6, ll. 38-43.) (R. Vol. II, p. 268.)

This arrangement was *so claimed* in the first McFeely patent (claim 189).* (R. Vol. II, p. 303.)

Heel Band Adjustment.

The heel band 58 in the first McFeely patent was supported upon resilient cords that held the sides and end of the band in yielding engagement snugly against the back of the heel. The tension on these cords was adjusted by the nuts 56. The pressure of the last and shoe against these bands and the heel clamp push the clamp against the adjustable back stop 69, which served to push the heel band forwardly. While there was no physical connection between the two, they moved together. These adjustments are described by McFeely in his first patent thus:

"The end portions of the cords are bent outwardly over the swiveled heads 51 of blocks 52, pivoted upon the front arms of angle levers 54, and are attached to separate springs 55 which are **independently adjustable** by threaded anchors 56." (First McFeely, p. 4, ll. 7-12.)

And the adjustment of the back stop, a part of the heel band adjustment, is described thus:

"A back stop 69 is adjustably mounted in position **to limit the backward movement of the shoe** into the elastic heel band which is effected by the connection to the jack post through the rod 43. **This insures a predetermined positioning of the shoe lengthwise with relation to the operating parts of the machine.** The back stop is forced to center the shoe laterally independently

* "A machine of the class described having, in combination, last supporting means, heel lasting wipers constructed and arranged to work an upper into lasted position over the entire heel seat portion of the shoe at a single operation and having stock flattening faces extending substantially continuously around the heel seat, and power operated mechanism to advance and retract the wipers and **positively to effect a relative movement of the wipers and the last perpendicularly to the plane of said stock flattening faces to relieve the drag of the wipers during their retracting movement.**"

of the band and thus assist in positioning the shoe laterally with relation to the lasting and tacking mechanism. In Fig. 18 the back stop is shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 **having marked on it graduations indicating the proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes.**" (First McFeely, p. 4, ll. 67-88.)

The First McFeely not only described the three adjustments for vertical position and in and out position of the last, and the predetermined positioning of the wipers, but even claimed such features. We submit that McFeely with his first patent's expiration had enjoyed to the full a monopoly on machines of this class with such adjustments for the same purpose of making shoes of various sizes—and nowhere in this or the later patent does he speak of a limitation on sizes that could be handled by the first McFeely construction.

THE McFEELY PATENT IN SUIT.

The second McFeely patent on its face admits that it is a mere improvement upon the first patent in certain details. It claims no new result—no new ability to work on a greater range of sizes than the first patent.

"This invention relates to lasting machines for use in the manufacture of boots and shoes, and is herein illustrated in its application to a machine for lasting the heel ends, or the heel seats, of shoes, the drawings showing a machine of the same general type as that illustrated in United States Letters Patent No. 1,129,881 granted upon my application on March 2, 1915, in which type of machine it is one of the objects of the invention to effect improvements." (p. 1, ll. 12-22.)*

* See Appendix A where the drawings of the two McFeely patents are arranged in parallel to show the complete identity of the machines except in minor mechanical details. The colors identify the same parts.

It then says as to the several improved adjustments:

"For the accomplishment of this object the invention provides a novel organization of means for effecting relative movement between the shoe and a shoe end embracing band to seat the shoe in the band." (p. 1, ll. 39-43.)

"The invention also provides, as an important feature, novel means for controlling the shoe in respect to movement in directions transverse to the plane of the shoe bottom." (p. 1, ll. 85-89.)

"As a further feature, the invention provides a novel construction of end embracing wiper mechanism including, among other improvements, a novel and convenient means for effecting relative adjustment of the wipers to conform them substantially to the shape of different shoes, for example to the different contours of the heel ends of right and left shoes." (p. 2, ll. 42-50.)

Thus the improvements consisted primarily of an improved heel band adjustment, an improved wiper adjustment, and an improved hold-down adjustment. These adjustments should have been, of course, claimed *per se* if they were new instead of claiming them as elements of the entire combination which was otherwise old.

The differences here in "detail" between the two patents are the substitutions for the rubber cords embracing the heel band with a detached pusher in the first McFeely for the attached pusher and heel band construction old in such patents as Eaton, No. 596,323; Brock, No. 601,935; Lombard, No. 524,445; Snow, No. 946,708; Keyes, No. 1,023,854; Brock, No. 1,188,616 and Plant, No. 958,280. The back of the band is supported by a clip 62 in exactly the same manner as in the patents to Brock, No. 1,188,616; Keyes, No. 1,023,854 and Plant No. 958,280. The pusher 66 of the second McFeely patent actuated by a pinion 88 (Figure 2) is the same as the pusher 54 actuated by the pinion 690 (Figure 2) of the first McFeely patent. **The resulting operation is the same.** The (green) wipers in both cases operate in

IDENTITY OF OPERATION AND CONSTRUCTION OF THE McFEELY PATENTS.

First McFeely, No. 1,129,881 Predetermined Adjustment of the Wipers. (R. Vol. II, p. 266.)

(1) The limitation of movement inwardly of the wiper is secured by primary adjustment. This is effected by adjusting spring 88 and plunger 87. (p. 5, ll. 2-55.)

Adjustment of Wipers to Different Sizes of Shoes

(2) Independently yielding connections to close the side wipers and corner wipers are provided through the flexible connections 71 to facilitate the adaptation of the wipers to the shape and position of right and left shoes which differ greatly when made on crooked lasts. (p. 5, ll. 82-116.)

Adjustment of Heel Band to Different Shoe Sizes.

(3) The ratchet 691 has marked on it graduations indicating the proper adjustment for different sizes * * * for different groups of sizes such as men's, women's or children's sizes, moves the back stop 69 to adjust fore and aft the heel band 58 against the tension of the adjustable resilient heel band supporting cords 50 adjusted at 56. (p. 4, ll. 1-116.)

Second McFeely, No. 1,558,737 Predetermined Adjustment of the Wipers. (R. Vol. II, p. 2.)

(1) The same primary adjustment is effected but by a single mechanism such as a handle 270. The tackers are bolted to the wipers and are adjusted with the wipers. The wipers and tackers move relative to one another by reason of the spring 236 and pin 244 (Figure 7).

Adjustment of Wipers to Different Sizes of Shoes.

(2) The adjustments of heel band, wipers, tackers and height of shoe are for the purpose of conforming the mechanism to different shapes and sizes of shoes. (p. 2, l. 48; p. 7, ll. 112-116.)

Adjustment of Heel Band to Different Shoe Sizes.

(3) The adjustment is by the red handle 92 in ratchet 94 operating pinion 88 and pusher 66 attached by clip 62 as in prior art patents to Brock No. 1,188,616, Keyes No. 1,023,854 and Plant No. 958,280. This adjusts the fore and aft position of the heel band 60, as in the first McFeely patent. The sides of the heel band are slidably supported on the clip 74 just as in the first McFeely patent they are supported on the cords which yield fore and aft motion or as in the prior art patents to Brock No. 1,188,616, Keyes No. 1,023,854 and Plant No. 958,280.

First McFeely, No. 1,129,881 Vertical Hold-Down Adjust- ment.

(4) The vertical position of the shoe as held by the blue hold-down 102 is adjusted by positioning the cam wedge 100 through the adjusting screw 104.

Wiper and Tacker Movement.

(5) The tackers are mounted upon the wipers and move with the wipers, being arranged to tack on the inside of the wipers after the final wiping operation and the wipers are slidably withdrawn. The tackers do not tack through the wipers.

Second McFeely, No. 1,558,737 Vertical Hold-Down Adjust- ment. (R. Vol. II, p. 2.)

(4) The vertical position of the shoe mounted on the last upon the yellow jack pin 148 is regulated by the adjustment of the blue hold-down member 200 which is actuated by the pinion 210 through a pinion 214 and rack 216 (Figures 2 and 9) from the master cam 116 as in the first McFeely. The adjustment is effected through the set screw on the rod 222 in member 208. The equivalent adjustment of the vertical position of the hold-down in the first McFeely was the cam 100 and adjusting screw 104. The adjustment of the hold-down is necessary to a much greater extent in the second McFeely because of the upwiping operation in which the vertical position of the shoe is controlled by the hold-down as an essential element. (p. 11, ll. 11-33.)

Wiper and Tacker Movement.

(5) The second McFeely follows the same principle of construction of the first McFeely; it attaches its tackers to the wipers to tack to one side on the inside of the wipers and provides means (Fig. 7) for adjusting the relative movement between the tackers and wipers to maintain them in predetermined relation to the wiper blades in all positions of adjustment. In this manner there can be this predetermined relationship brought about by the movement of the tackers and the wipers together with relative movement between tackers and wipers just before the tacking operation to withdraw the wipers to permit tacking.

the same manner and in both cases have bolted to them to move with them (brown) tackers which tack on the inside of the (green) wipers. (Appendix A.)

In the first McFeely patent the predetermined adjustment of the wipers to take care of different sizes and shapes of shoes is effected through the adjusting spring and pin 88 and 87 while the finger 122 on the tacker halts the tacker in tacking position so that there is relative movement between the tacker and the wiper. The same function is performed (Figure 2) in the second McFeely where the spring 236 permits relative movement between the tacker and the wiper. This permits the tackers to clear the wipers in order to tack. Likewise, there is primary adjustment of the relative position of the wipers prior to wiping by a single handle 270 (Figure 1). This was perhaps more convenient than the multiple adjustments 87 and 88 in the earlier patent, but certainly not invention. Even if more effective, there was no difference in principle which would justify an extension of a monopoly another seventeen years.

ADJUSTMENTS COMPARED.

Now let us compare the two McFeely patents on the question of whether these adjustments were found in the first patent as well as in the second. It would seem immaterial whether the adjustments were better in one than in the other, because the claims of the second McFeely cover the adjustments broadly where mentioned as elements in the combination.*

First Adjustment: Heel Band.

As to the first means for adjusting the in and out position of the heel band, see the red (Appendix A) lever with an adjusting screw or ratchet in Figure 1 of both McFeely patents. The movement of this lever moving the heel band

* The chart opposite this page gives a summary comparison.

in and out is to adjust for different sizes of shoes. The first McFeely patent says:

"In Fig. 18 the back stop is shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 having marked on it graduations indicating the **proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes.**" (p. 4, ll. 79-88, R. 286, Vol. II.)

"The independently yielding connections also facilitate the adaptation of the wipers to the shape and position of right and left shoes which differ greatly when made on crooked lasts." (p. 5, ll. 107-111, R. 287, Vol. II.)

Adjustments for different sizes of shoes are claimed in the first McFeely patent in claims 1, 81, 99, and 100, and such typical claims as 167 and 168. (R. Vol. II, p. 302.)

Contrast these various statements in the specification as to the adjustments for different sizes of shoes and the claims for such mechanisms, mentioning the purpose of such adjustments, with the opinions below that the first McFeely patent was incapable of operating successfully upon a full range of shoe sizes because it lacked adjustments for that purpose, and particularly compare the vertical section of Figures 2 (see colored chart, Appendix A), of both patents. In both, the back support is adjustable and engages the back of the heel band (orange) in order to push it or slide it. In the first case, the heel band is supported on the cords 50 and in the second case, the heel band is supported on its sides also slidably by the clips 74. **The adjustment of a slidable heel band** supported on its sides and moved back and forth by an adjustable back stop was old and common practice in a number of prior patents, such as Plant No. 958,280 (see Figures 21 and 23), Keyes No. 1,023,854 (see Figure 10), Brock No. 1,188,617 (Figures 1 and 2), etc. Furthermore, the first McFeely patent provides an additional adjustment of the heel band inwardly

and outwardly through the agency of the cords 50, which is described as follows:

“* * * The end portions of the cords are bent outwardly over the swiveled heads 51 of blocks 52, pivoted upon the front arms of angle levers 54, *and are attached to separate springs 55 which are independently adjustable by threaded anchors 56.* A lining 58 of leather, rubber, felt or other suitable material is arranged within the bands 50 and distributes the pressure of the bands without interfering with their relative conforming movement *to adapt them to the contour of each last when they are put under tension by the actuation of the levers 54.*” (p. 4, ll. 7-19.)

When the shoe is forced into the heel band against these resilient cords, the adjusting nuts 56 adjust the tension on the band and cooperate in sliding the band. Thus we have not only the same identical adjustment of the heel band in both McFeely patents, but the additional adjustment of the band supporting cords.

The in and out position of the heel band is adjusted in Pym No. 1,368,968 by the adjustable backing member 81 connected to the back of the heel band, and the same thing is true of the aforementioned patents. A clear example is that of Plant No. 958,280 with the identical construction of the clip 188 on the back of the heel band 181 actuated by the pinion 199 through the back adjusting member 198. In this case the physical form of the adjusting mechanism and means of attachment to the back of the heel band is identical with that of the McFeely patent in suit.

Second Adjustment: Wipers.

The adjustment means (green) is means for predetermined adjustment of the wipers to initially position them for different sizes of shoes to limit the movement of the wipers (and tackers also) inwardly to a predetermined point to fit various sizes of shoes. This is old in such patents as Pym No. 1,368,968, Copeland No. 244,714, Lombard No. 524,445, Eaton No. 596,323, Brock No. 601,935 and

Snow No. 946,708. The first McFeely uses the springs 88 and plunger 87 adjusted by a screw nut (Figures 1, 2 and 8 of the first McFeely patent) for engaging with the cam surface 86 so as to adjust the extent of the inward movement of the wipers according to the size of the shoe. The second McFeely patent uses the handle 268 for the same purpose.

The purpose of the predetermined adjustment of the wipers is to limit the extent of movement of the wiper so that it will complete its stroke into a predetermined position over the last bottom to wipe the upper in position to be tacked, i.e., **the wipers will only go so far inwardly.** As the tackers and wipers in the first McFeely patent are connected together, the adjustment of the wipers likewise adjusts the tackers. **The precise mechanism for doing the same thing is found in the Pym patent,** as shown in Figure 9 of the second McFeely patent and Figure 4 of the Pym patent. In first McFeely the feelers 122 act as "gages" to limit the inward movement of the tackers in cooperation with the predetermined manual adjustment means 88, 87, Figs. 8 and 13. (p. 6, ll. 55-65.) In second McFeely this same result is accomplished by moving the lever 270 (Figures 1 and 3) which determines by its position how far the wiper plates can go before the stop. The first McFeely patent uses a springpressed plunger 87 adjustably positioned for manual predetermined adjustment by the nut 88. The plunger 87, as will be seen in Figure 8 in the attached illustration, engages with a sloping cam 86 so that if the wiper 70 travels too far, the resistance of the springpressed plunger 87 will be overcome and the cam will trip, ceasing further movement of the wiper, because the means pulling it is disconnected. This is described in the first McFeely patent. (pp. 4-5, ll. 116-130; 1-24.)

The wipers are further adjusted in the first McFeely patent **to different sizes and shapes of shoes** by reason of the independently yielding connections to close the side

wipers and the corner wipers through the movement transmitted by the angle levers 90. The feature of predetermining the adjustment of wipers for different sizes, rights and lefts, etc., is a common one in bed lasters, as admitted by plaintiff's own witnesses. (R. Vol. I, pp. 46, 63, 64.) Such patents as Eaton, 596,323; Plant 958,280; Lombard, 524,445; Brock, 601,935; and Snow, 946,708, have predetermined adjustment for the wipers.

Third Adjustment: Vertical Movement of Hold-Down.

The third adjustment is the manually adjustable means for adjusting the amount of vertical movement of the blue hold-down which determines the vertical position of the shoe and last. In the first McFeely patent this hold-down (Fig. 2) 102, is moved by the same rack and pinion construction as the second McFeely patent. These racks and pinions are moved through the horizontal rods engaging with the power cam surfaces. In the first McFeely patent an adjusting cam 100 is adjusted inwardly and outwardly to determine the height of the shoe by the set screw 104.

This same adjustment is in the second McFeely patent where the adjusting screw and nut engage the member 208 (Fig. 9). Bed lasters also have the same adjustments as the patents in suit; see Keyes No. 1,023,854 which has an adjustable hold-down 66, as does Pym No. 1,368,968, using the adjusting screws 74 and 75 adjusting the vertical position of the hold-down 72.

ARGUMENT.

POINT I. EXTENSION OF EXPIRED MONOPOLY.

The McFeely patents are substantially identical, except for three substituted adjustments, themselves old in this art: the second McFeely patent in suit No. 1,558,737 has simply repatented an old combination set forth and claimed in the first McFeely patent No. 1,129,881 as well as other patents of respondent.

The two McFeely patents, the expired patent No. 1,129,881 and the McFeely patent in suit No. 1,558,737, as will be seen from an examination of their drawings and specifications, are **substantially identical in construction, operation and result.**

The Nature of Heel Seat Lasting: Accommodation of Different Sizes Inherent in Such Machines.

Heel seat lasting is the operation of wiping the margins of the leather adjacent the bottom of the heel over the bottom of the heel to draw the leather taut and close about the heel. The leather so turned over on the bottom of the heel is tacked into position on the heel bottom. Thereafter, the heel itself is mounted on the heel portion of the inverted shoe.

In practice, it has been traditional for many years, and still is, to place a wooden last inside of the shoe that is being made with the bottom of the shoe up. The leather constituting the body of the shoe has its bottom edges projecting upwardly around the heel portion of the shoe and the heel portion of the last. This upwardly extending margin of leather about the heel of the last and the shoe, is then turned over by wiper plates moving across the bottom of the heel to bend the leather over into a horizontal position. Thereupon, the leather is tacked in its horizontal position to the bottom of the shoe. This tacked portion is ultimately covered by the heel itself which is mounted on the bottom of the shoe. (R. Vol. I, pp. 65-68.) To further explain this to the Court, let us refer to the basic Copeland patent No. 244,714 (Ex. J, R. Vol. II, p. 114) issued sixty years ago. All of the mechanism and movements for heel seat lasting in a power machine with automatic tacking are found in this early patent. Since then the art has been devoted to the perfection of mechanical details. It was the first machine for automatically performing the combined operations of heel seat lasting by wiping the leather of the heel or toe across the bottom of the last, while tacks were

inserted to hold the leather in position on the bottom of the sole over which the leather had been wiped. Copeland mounted his brown tackers on the green wipers so that they would move together and the tackers tacked through holes in the wipers. He says:

“This invention relates more especially to devices for lasting the toe and heel portions of boots and shoes, and it embraces, first, *means for holding the upper to the side of the last*, about the toe or heel, prior to the folding of the edge thereof upon the surface of the insole; second, *folding-plates*, or devices for folding the edge of the upper upon the insole, and a gang or *group of devices for driving fastenings simultaneously* or by a single impulse after the folding-plates have performed their functions, and which may or may not be placed in position to be operated by them; * * *.” (p. 1, ll. 19-31.)

Copeland used the adjustable wiper actuators C¹ to move the wipers and tackers into operating position across the bottom of the shoe. (Defs. Ex. J.) **Thus it was possible for Copeland to predeterminately adjust, before the movement of closing the wipers, the relative position of the wipers with respect to the shoe to accommodate different sizes and rights and lefts.** He says:

“The heel-lasting devices, being secured at the end of the sliding plate C, are by the movement of the toe-lasting plates inwardly caused to assume, automatically, the proper position which the apparatus should bear at the commencement of the lasting—that is, the upper-holding devices are thrown forward and the folding-plates are opened.” (p. 2, ll. 102-109.)

A yielding positioning heel clamp b was mounted on the adjustable end of the shoe support b¹ so as to adjust the pressure on the end of the shoe to hold it in suitable position. This machine was either driven “in connection with a treadle when operated by foot-power, and a cam lever when operated by motive power, for reciprocating said blocks” (p. 2, ll. 30-33); “but we may use, in combination with the

folding-plates, any arrangement of devices for driving fastenings of any description desirable, * * *. The advantages of this invention are that the toe and heel, or either, **can be lasted much more rapidly** than by the ordinary toe and heel lasting mechanism." (p. 2, ll. 120-132; p. 3, ll. 1-6.)

Here we have a power-operated production machine for performing the heel seat lasting operation which is *adjustable to different sizes of shoes* due to the adjustment of the support C and the spring fingers b as well as the relatively adjustable actuating clamps C¹ that move the wipers and tackers; and the broad combination was so claimed.¹

It, of course, is obvious that **any machine for heel seat lasting must be adjustable to different sizes of shoes and rights and lefts, or it would be of little value**, and the Copeland construction, as well as all subsequent patents in this record, recognized such a requirement by proposing an infinite variety of engineering mechanisms for accommodating heel seat lasting machines to this inevitable condition in shoe making. Respondent's position is that it was not until the second McFeely patent that such a construction was disclosed which would so fully accommodate itself. How unsound this position is, is best demonstrated by a brief review of the facts as shown by the prior patents. Different sizes of shoes and rights or lefts require adjustments for the height of the shoe and adjustments of the position of the wiper plates so that they will start to wipe from the right position. This requires hold-down adjustments for the lasts determining the vertical position, and adjustments for the wipers determining the start of the

¹ "4. In a machine for lasting the uppers of boots and shoes, the combination of the last, a jack for supporting it, the toe or heel folding plates, and a gang or group of fastening driving devices supported and adapted to be positioned by the movement of the lasting plates, all substantially as and for the purposes described." (Copeland, 244, 714.)

wiping operation. For instance, Lombard, No. 524,445 (Ex. K, R. Vol. II, p. 128) says:

"One of the most important and characteristic features in my present invention comprises **mechanism for automatically adjusting the position of the wipers to the varying contours** of the heels of boots or shoes; * * *." (p. 1, ll. 40-44.)

"* * * Consequently the wipers are contracted to (a greater extent and are thus adapted to fit a small heel, conversely with a larger heel. Since the position of the bolt is changed **for different sizes of shoes**, it is evident that the wipers are automatically adjusted for each and every size." (p. 1, ll. 80-86.)

And Eaton, No. 596,323 (Exs. L and M, R. Vol. II, p. 138) so claimed the Copeland combination with these wiper adjusting means.

"1. In a lasting-machine, a toe or heel lasting mechanism comprising a base or support, a carrier movable thereon, devices for moving the carrier, wipers pivotally connected with the carrier, mechanism operated by movements of the carrier for giving the wipers an accelerated motion, **and wiper-adjusting devices co-operating with said mechanism**, said devices being independent of the carrier-moving devices."

Eaton consists of a heel band clamp supported at the outer ends by the supports and pressed at the back by similar supports. The wipers B⁸ are adjusted with respect to one another predefinitely by the end wheel 27 to the rack 24 and pinion 21, and thereafter the wipers are moved forwardly by the handle B⁹. The patentee provides "**means for adjusting the wipers toward and from each other before giving them the combined forward and inward movement which wipes the upper over the last.**" (p. 1, ll. 98-102.)

And Brock, No. 601,935, taught his way of adjusting the wipers for different sizes and shapes, saying:

"The principal object of my invention is the production of a lasting-machine wherein the lasting devices,

whether in the form of wiper plates or otherwise and whether located at the heel, toe, or elsewhere, may be **predeterminately positioned** at the same distance from the outside of the last **whatever be the shape, size, or width of the last.** While it is not essential that this positioning mechanism be automatic in its action, yet I prefer that it be automatic, and in the subsequent specification and in the drawings I shall illustrate my invention in connection with an automatic mechanism." (p. 1, ll. 68-81.)

This was a predetermined adjustment in advance of the lasting operation.

And respondent's expired Pym Patent No. 1,368,968 (R. Vol. II, p. 457), which was originally in this suit and abandoned by it just before trial because of its expiration, not only discloses the predetermined adjustment of the wipers (p. 2, ll. 3-10, Pym patent, R. Vol. II, p. 487) but claims the predetermined adjustment.¹

So much for the teachings on the predetermined adjustment of the wipers of which there are numerous other examples.

The adjustment of the heel band in and out which clamps the heel of the shoe and holds it during wiping is also an old expedient in lasting machines.

Respondent's own (Keyes, No. 1,023,854 [Fig. 10] R. Vol. II, p. 238, or Brock, No. 1,188,616 [Figs. 9 and 10] R. Vol. II, p. 388) show heel band and heel band supports attached to one another for the in and out adjustment, substantially identical with that of the second McFeely patent

¹ "168. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper support movable to carry the wipers lengthwise of the shoe, and means operated by said movement of the wiper support for closing the wipers inward laterally of the shoe during their movement lengthwise of the shoe comprising parts movable with said support and cooperating parts normally held against movement with the support, **said last named parts being adjustable relatively to said support to determine the initial positions of the wipers.**"

in suit. The alleged new feature of having the heel band slidable fore and aft to accommodate different sizes of shoes with the heel band permanently attached to the mechanism to push it and pull it, is fully disclosed in these patents. The patentee Brock saying:

"The heel band through its chain 86, Fig. 10, is attached at its rear closed end to a block 88 which is dovetailed upon a head 89 for sliding adjustment transversely of the machine. The block 88 has a lateral arm pivotally connected to the front end of a lever 90 of the third class that is fulcrumed at 91 and has threaded engagement with an adjusting rod 92 carrying a hand wheel 94. The head 89 has threaded engagement with a rod 95 having a hand wheel 96 **by which the band can be adjusted lengthwise**, both adjustments being independent of the wipers." (p. 4, ll. 16-28, R. Vol. II, p. 394.)

The third adjustment of the height of the last and shoe, known as the adjustable hold-down, is likewise old, because a very necessary adjustment due to different sizes of shoes, would require different vertical positions of the last to insure that the wipers will miss the bottom of the shoe but come close enough to it to neatly fold over the leather side walls of the shoe on the bottom of the last prior to tacking. The hold-down keeps the shoe upon the supporting jack and the adjustment of the hold-down determines the elevation of the shoe as the hold-down presses the shoe and last against the supporting jack spring that yieldingly supports the shoe.

In respondent's Pym patent, formerly in suit and now expired, such an adjustment was effected by the screw and nut or sleeve, 74-77. Pym said:

"Obviously the holddown may be adjusted vertically by turning sleeve 74." (Pym patent, p. 6, ll. 67-69, R. Vol. II, p. 462.)

Other prior patents, including the first McFeely, elsewhere discussed, show these three adjustments as conven-

tional and necessary to fit lasting machines to different sizes of shoes. (R. Vol. II, p. 266.) The second McFeely patent says:

"This invention relates to lasting machines for use in the manufacture of boots and shoes, and is herein illustrated in its application to a machine for lasting the heel ends, or the heel seats, of shoes, **the drawings showing a machine of the same general type as that illustrated in United States Letters Patent No. 1,129,881 granted upon my application on March 2, 1915, in which type of machine it is one of the objects of the invention to effect improvements.**" (p. 1, ll. 12-22.)

The tack mechanism is the same, p. 3, ll. 84-92; p. 9, ll. 7, etc.; the operating mechanism and sequences, p. 12, ll. 22, etc. The only differences claimed by respondent are the improvements in adjustments in the second McFeely patent to the first McFeely patent to make (a) the wipers or tackers; (b) the heel band; and (c) the hold-down adjustable so as to give the second McFeely patent greater flexibility in lasting a greater variety of sizes of shoes. (R. Vol. I, p. 481, Finding 29; C. C. A. opinion 511.)

The District Court, whose findings were affirmed by the Circuit Court of Appeals, held:

"* * * that while the McFeely patent in suit No. 1,558,737 embraces many elements of the McFeely patent No. 1,129,881, the earlier McFeely patent lacked, so far as it relates to Claims 6 and 85, certain elements which prevented it from being commercially successful; that is to say, among others, it would not permit of a successful operation upon a range of shoe sizes; the operation of the tackers and wipers could not be controlled with accuracy, or in other words, adjusted as are the tackers and wipers in the machine covered by the patent in suit; and also, immediately before the tacking movement the wipers would be retracted partly to permit of the tacking and in so doing have a tendency to pull the upper from the insole, which would tend in some instances to and in many operations did make

an imperfect job, if not damage the shoe." (R. Vol. I, p. 483.)

The additions comprised, therefore, these three improved substituted adjustments to make the second McFeely a more commercial machine to work on a broader range of shoe sizes. If they were novel, they should have been patented *per se*. The additions themselves, as hereinafter pointed out, were old in this art, used in similar combinations for heel seat lasting, and were substitutions within the skill of the art open to the public and no longer susceptible to monopoly exclusively by this respondent, whose patents thereon had expired. (R. Vol. II, pp. 280, 440.)

McFeely did not stop with patenting these adjustable features themselves, but included the old features of the first McFeely patent which expired in 1932. McFeely, in his present claims, clearly failed to point out what he invented, if anything, but commingled his alleged improvements with an old heel seat lasting machine which was public property. This is contrary to R. S. 4888,* U. S. C. Title 35, Sec. 33, which requires the applicant to particularly point out and distinctly claim the part claimed as his invention.

* "Before any inventor or discoverer shall receive a patent for his invention or discovery he shall make application therefor, in writing to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery. The specification and claim shall be signed by the inventor. No plant patent shall be declared invalid on the ground of noncompliance with this section if the description is made as complete as is reasonably possible."

A patentee cannot, by improving elements of an old combination, whose construction and operation is otherwise unchanged except as modified or improved by the adjustments, in effect repatent the old combination for another seventeen years by reclaiming it with the improved elements substituted for the old elements. *Bassick v. Hollingshead*, 298 U. S. 415 and *Lincoln v. Stewart Warner Corp.*, 303 U. S. 545.

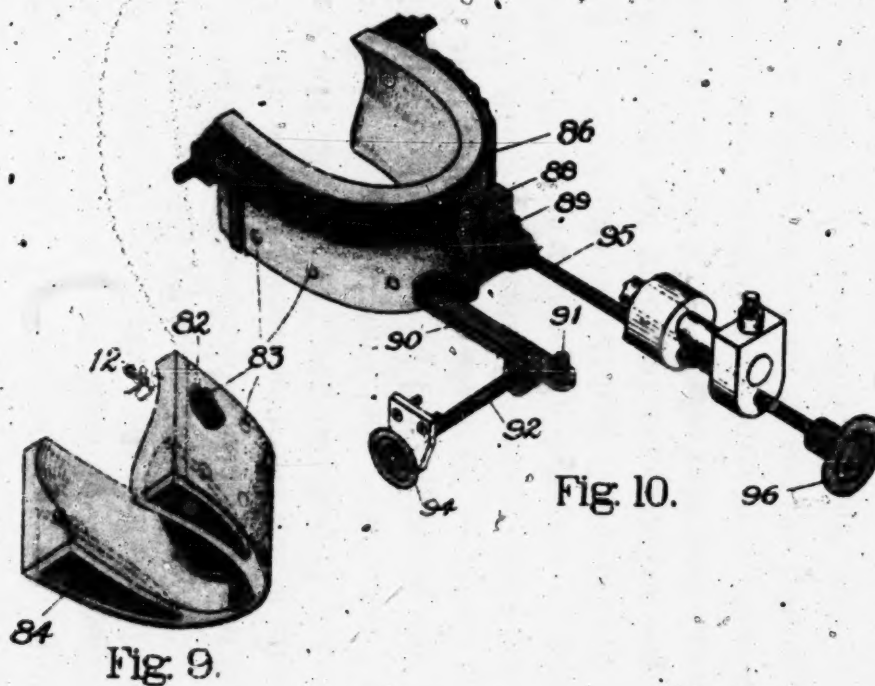
The McFeely patents relate to an automatic heel seat lasting machine for the purpose of "heel seat lasting" i.e., the turning over of leather of a shoe upper on the bottom of the insole and the tacking of the leather against such insole before the application of the heel to the shoe. Heel seat lasting is an accomplishment practiced by automatic and semi-automatic machinery in this art of more than sixty years. (Copeland 244, 714, etc., R. 114, Vol. II.) The result of automatic heel seat lasting of shoes of different sizes was accomplished by first McFeely patent No. 1,129,881, the Court of Appeals below finding that it "successfully lasted shoes of specific sizes." (R. 510, Vol. I.)

According to respondent's claim as to the difference between the first McFeely and the second McFeely patents, **there are three adjustments found in the second McFeely not found in the first McFeely.** The result of these adjustments was to make it possible to handle a greater number of different sizes and shapes of shoes, according to respondent's claim. These adjustments were first that of the heel band by which it was connected positively for fore and aft movement to fit different lengths of shoes. This two-way, in and out adjustment *per se* in the second patent, was substituted for adjustable rubber band supports that moved the heel band in one direction only while the back pusher moved it in the other direction in the first McFeely patent. (Opinion of Circuit Court of Appeals, R. Vol. I, p. 511.) The two-way adjustment of a heel band through a fixed connection between the band and pusher in the second Mc-

1,188,616.

M. BROCK.
LASTING MACHINE.
APPLICATION FILED JUNE 29, 1912.

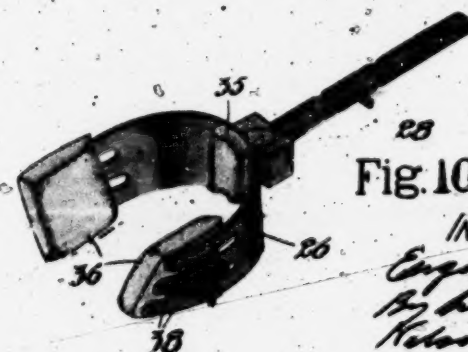
Patented June 27, 1916.
4 SHEETS—SHEET 3.



1,023,854.

E. L. KEYES.
MACHINE FOR USE IN THE MANUFACTURE OF SHOES.
APPLICATION FILED APR. 30, 1908.

Patented Apr. 23, 1912.
4 SHEETS—SHEET 4



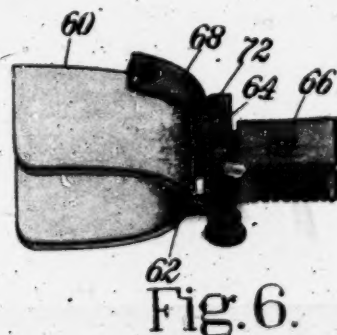
INVENTOR.
Engine L. Keyes
By his Attorney,
Robert M. Howard.

Oct. 27, 1925.

R. F. McFEELY
LASTING MACHINE

1,558,737

Original Filed Aug. 16, 1916 6 Sheets—Sheet 1



Feely was an old feature in the art as shown in the patent to Copeland, No. 244,714, Figure 3; Lombard, No. 542,445, Figure 5; Eaton, No. 596,323, Figure 3; Brock No. 601,935, Figure 8; Plant, No. 958,280, Figure 5; Brock, No. 1,188,616, Figures 9 and 10; Pym, No. 1,368,968, Figures 12 and 13, and Keyes, No. 1,023,854, Figure 10. (R. Vol. II, pp. 114, 122, 136, 150, 222, 238, 388, 440, 454.)

The second adjustment in the second McFeely was a predetermined one for the wipers to initially position them to accommodate different sizes of shoes. (Opinion of Circuit Court of Appeals, R. Vol. I, p. 511.) This also was an adjustment common in this art in such patents as Pym, No. 1,368,968, Figure 6; Copeland, No. 244,714, Figure 2; Eaton, No. 596,323, Figure 3; Brock, No. 1,188,616, Figure 2, and Snow, No. 946,708, Figure 2. (R. Vol. II, pp. 440, 446, 427, 136, 384, 172.)

The third adjustment (opinion of Circuit Court of Appeals, R. Vol. I, p. 511), was the vertical movement of the hold-down, which also was, *per se*, old in respondent's expired Pym patent No. 1,368,968, Figure 8, formerly in this suit, and Keyes, No. 1,023,854. (R. Vol. II, pp. 232, 444.)

All three of these adjustments were found in the first McFeely patent.

The Court of Appeals below said:

"It is true that many of the features of the claims are old and that an organization, including wipers and tackers, was shown in somewhat primitive form in Copeland. It is also true that adjustability of elements, though not in the form shown in the first McFeely patent, is added by the patent in suit to the McFeely type laster, and that mere adjustability by common mechanical expedients may not, of itself, denote the presence of the quality of invention and merit the issue of a patent." (R. 511, Vol. 1.)

The adjustable features in the second McFeely do not in any way modify the lasting operation. **The adjustments**

are made by hand before the lasting operation starts. (R. Vol. 1, p. 47, A. 3, Ib. 409-10; Ib. 69, A. 17, Ib. 368, XA. 312-315, Ib. 369, XA. 319.) The result of the lasting operation is exactly the same as in the first expired McFeely patent and in other prior art patents. (R. 15, Vol. 2, lines 19-23, p. 3, patent 1,558,737; Rec. 129, Vol. 2, XA. 1-15; Ib. 298-9; Ib. 300-5; Ib. 314-16; Ib. 318-321; Ib. 362-3, XA. 263-274; Ib. 394-5; Ib. 420.)

Petitioner's position is that the claims of the second McFeely patent go to the old combination, which is expired, and include these adjustments as a part of the old combination in substitution for other adjusting mechanism in the first McFeely patent, thereby **in effect repatenting the old combination by reclaiming it with the improved elements substituted for the old elements**, as for instance, substituting the two-way adjusting mechanism for the heel band in the first McFeely patent for its heel band with the rubber cord supports not positively connected to the back pusher.

The evil of the system of granting and sustaining patents for a repatented combination from which there has been removed a more or less uneconomical element and substituting an old element which is more effective, permits an endless extension of monopoly, and a permutation of the possible combinations so that the patents secured are endless in number and never restricted in scope. Respondent in the case of the Hoyt patent in suit was held guilty of such extension of monopoly by the Circuit Court of Appeals herein. (R. 512-13, Vol. 1.) This practice enables an energetic Patent Department of a great corporation like that of respondent, through the sheer mass of such patents so secured by repatenting old monopolies, to make it impossible for any manufacturer of shoes to do other than to comply with its demands by rental of its machines and thereby pay tribute to such patents **without end to the tribute.**

In *Bassick v. Hollingshead*, 298 U. S. 415, this Court held that an old combination could not be repatented by improving one or more of the old elements. This Court said:

"It is plain that Gullborg invented improvements of two of the mechanical elements of an old combination consisting of grease pump, hose, hose-coupler, and a grease cup or pin fitting. First, he contrived an improved pin fitting. This he patented as such (No. 1,307,733.) Secondly, he invented an improved form of coupler to be attached to the end of the hose leading from the pump to the fitting. Instead of patenting this, as he did the pin fitting, he claimed a combination of pump, hose-coupler, and pin fitting, and embodied in the combination his improved form of coupler. (No. 1,307,734, the patent in suit; claims 1-6, 8 and 10.) He further claimed the combination between his patented pin fitting and any form of grease gun whether that claimed in his patent or unpatented and old in the art. (Claims 14 and 15.) **The question then is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other federal courts.**" (pp. 424-425.)

The Court of Appeals was reversed.

In *Lincoln v. Stewart Warner*, 303 U. S. 545, this Court also held the patent invalid because the improvement was in one part of an old combination.

"* * * The invention, if any, which Butler made was an improvement in what he styles in his specifications the 'chuck' and in his claim a 'coupling member.' It is not denied that multi-jawed chucks had been used in industry and as couplers in lubricating apparatus. Butler may have devised a patentable improvement in such a chuck in the respect that the multiple jaws in his device are closed over the nipple by the pressure of the grease; but we think he did no more than this. **As we said of Gullborg in the Rogers case, having hit**

upon this improvement he did not patent it as such but attempted to claim it in combination with other old elements which performed no new function in his claimed combination. The patent is therefore void as claiming more than the applicant invented. The mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than that theretofore performed or produced by them, is not patentable invention. And the improvement of one part of an old combination gives no right to claim that improvement in combination with other old parts which perform no new function in the combination." (pp. 549, 550.)

The Court further said:

"* * * The function of a pump has always been to force a fluid or a grease through a conduit. The fact that this function of the pump is utilized in Butler's improved form of coupler not only to convey the lubricant to the bearing but to operate the jaws of the chuck does not alter the function of the pump. The invention, if any, lies in the improvement in the coupling device alone." (p. 551.)

"We conclude that Butler's effort, by the use of a combination claim, to extend the monopoly of his invention of an improved form of chuck or coupler to old parts or elements having no new function when operated in connection with the coupler renders the claim void." (p. 552.)

The heel seat laster in the second McFeely patent operates exactly the same as the heel seat laster in the first McFeely patent. The addition of the adjustable features, taken from the old art, does not in any way affect the old heel seat lasting mechanism of the first McFeely patent. The result obtained by both is the same. The adjustments are made solely for the purpose of accommodating different sizes of shoes and are used only when a different size shoe is to be lasted. McFeely's effort in his second patent, by the use of a combination claim, to extend the monopoly of his invention of an improved form of ad-

justment (taken from the prior art) to old parts or elements (the first McFeely patent) having no new function when operated in connection with the coupler renders the claims void. The Court of Appeals erred in not recognizing that the facts in the present case are exactly the same as in the "*Bassick*" and the "*Lincoln*" cases, *supra*; and in not holding the claims invalid because they cover an old combination with adjustments added which do not operate when the heel seat lasting operation is effected, and which operate only when the size of the shoes is to be changed and before any different sized shoe is lasted.

It misapplied the principles laid down by this Court as evidenced by the following statement from its opinion (R. Vol. I, p. 511):

"There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element, as in *Bassick v. Hollingshead*, 298 U. S. 415, or *Kodel Elec. Co. v. Warren Clock Co.*, 62 F. (2d) 692 (C. C. A. 6)."

But what this "much more" feature or function was, was not stated by the Court. It does not, of course, exist.

We submit that the doctrine against repatenting an old combination by substituting old elements or even adding old elements, is not limited to the conditions just specified in the above quotation. Whatever improvement was made by McFeely should have been covered specifically, and claims to more than that, including public property, are invalid.

This Court's decision prohibits remonopolizing that which has already been dedicated to the public by expiration of a prior patent, whether the latter effort to repatent involves a matter of substitution of elements or additions thereto, or improvement. To so limit the doctrine of the *Bassick* and *Lincoln* cases, as did the Court of Appeals below, would make them substantially ineffective to prevent the abuses from extension of monopoly in most cases.

**Adjustments to Give Greater Flexibility and Range of Sizes:
Not Invention.**

The claimed difference between the first McFeely and the second was the ability of the latter, by reason of the improved adjustments, to produce greater range of shoe sizes. The Court below said:

“Although the machine (first McFeely patent) successfully lasted shoes of specific sizes, it proved incapable of operating upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory * * *.” (R. Vol. I, p. 510.)

Improved adjustments are claimed by respondent as the reason for the McFeely patent in suit being capable of operating on a full range of sizes. But adjustability is not invention. To improve a thing by making it easier to adjust, or to work, or to vary operating conditions or adapt it to a greater range of sizes, is not invention. The adjustment of an existing machine making it more convenient or accurate is rather within the skill of the artisan than within the genius of the inventor. At best, all the inventor can hope for is to patent the particular adjustment as a separate entity, if it meets the tests of invention.

In the case of *Smith v. Magic City*, 282 U. S. 784, 51 S. Ct. 291; 75 L. Ed. 707, Mr. Chief Justice Hughes said:

“* * * and we are also of the opinion, as was the Circuit Court of Appeals for the Sixth Circuit (*Smith v. Springdale Amusement Park, supra*), that supplying the feature of the truss rods and the adjustable stay rods did not constitute invention. To provide such supports would be but a step obvious to any skilled mechanic.” (p. 792.)

Directoplate Corp. v. Donaldson Lithograph Co., 51 F. (2d) 199 (C. C. A. 6); *Paquette et al. v. Potter Mfg. Co.*, 46 F. (2d) 271 (C. C. A. 6); *Smyth Mfg. Co. v. Sheridan, et al.*, 149 F. 208 (C. C. A. 2); *Wailes Dove-Hermiston Corp. v. Oklahoma Contracting Co.*, 48 F. (2d) 901 (D. C. N. D.

Tex.), affirmed in 56 F. (2d) 143 (C. C. A. 5); *Sipp Electric & Machine Co. v. Atwood-Morrison Co.*, 142 F. 149 (C. C. A. 3); *American Graphophone Co. v. Gimbel Bros.*, 240 F. 971 (C. C. A. 2); *Houser et al. v. Starr*, 203 F. 264 (C. C. A. 6).

The mere carrying forward of the old idea of an adjustable heel seat lasting machine, no matter how much improved such a machine might be, was an engineering accomplishment open to any manufacturer. All that McFeely did in his last patent was as to his first patent "a mere carrying forward of new or more extended application of the original thought, a change only in form, proportions or degree, doing substantially the same thing in the same way, by substantially the same means, with better results." As Mr. Chief Justice Waite observed in 91 U. S. 150, 23 L. Ed. 267:

"This is not such an invention as will sustain a patent."

Wright v. Yuengling, 155 U. S. 47, 15 S. Ct. 1, 39 L. Ed. 64; *Belding v. Challenge Corn Planter*, 152 U. S. 100, 14 S. Ct. 492, 38 L. Ed. 370; *Railroad v. Elyria*, 244 U. S. 285, 37 S. Ct. 502, 61 L. Ed. 1136.

Even if Improved Adjustable Means New Per Se: Still No Excuse to Repatent an Old Combination.

The situation that is presented to this Court in the attempt of the respondent to monopolize by patents what is a natural and ordinary engineering and manufacturing development, is perfectly described by Mr. Justice Bradley in *Atlantic Works v. Brady*, 107 U. S. 192, 2 S. Ct. 225, 27 L. Ed. 438:

"The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head-workmen and engineers is generally adequate to devise, and which, indeed, are the natural and proper outgrowth of such development.

Each step forward prepares the way for the next, and each is usually taken by spontaneous trials and attempts in a hundred different places. To grant to a single party a monopoly of every slight advance made, except where the exercise of invention, somewhat above ordinary mechanical or engineering skill, is distinctly shown, is unjust in principle and injurious in its consequences." (pp. 199-200.)

In *Lincoln v. Stewart-Warner*, 303 U. S. 545, the patentee, Butler, improved a couplet, but tried to patent it in combination with the pump. This Court held the claim void, saying:

"The function of a pump has always been to force a fluid or grease through a conduit. The fact that this function of the pump is utilized in Butler's improved form of coupler not only to convey the lubricant to the bearing but to operate the jaws of the chuck does not alter the function of the pump. The invention, if any, lies in the improvement in the coupling device alone." (p. 551.)

At p. 552 this Court said:

"We conclude that Butler's effort, by the use of a combination claim, to extend the monopoly of his invention of an improved form of chuck or coupler to old parts or elements having no new function when operated in connection with the coupler renders the claim void."

McFeely claims here are void because, even if the adjustable means were new *per se*, the attempt to extend the monopoly to cover old parts or elements renders the claims void when such claims seek to reclaim the old general structure by adding adjustments that are new, at least, *per se*. The same rule was announced in *Bassick v. Hollingshead*, 298 U. S. 415, in which this Court said:

"It is plain that Gullborg invented improvements of the two mechanical elements of an old combination consisting of grease pump, hose, hose-coupler, and a grease cup or pin fitting. First, he contrived an im-

proved pin fitting. This he patented as such (No. 1,307,733.) Secondly, he invented an improved form of coupler to be attached to the end of the hose leading from the pump to the fitting. Instead of patenting this, as he did the pin fitting, he claimed a combination of pump, hose-coupler, and pin fitting, and embodied in the combination his improved form of coupler.

* * * The question then is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other federal courts." (pp. 424-425.)

It follows that the McFeely claims, even if there is novelty in the adjustable means *per se*, are void because they include the adjustable means with old parts, making an old combination, which cannot be done.

Substitution of Improved Adjustments Securing an Improved Result is Not Invention.

Change in proportions of the McFeely adjustments does not constitute invention, because a change in proportions is primarily a matter of mechanical skill or engineering talent. This falls within the domain of design, not of invention, because it is a problem of calculation based upon known engineering data and can be accomplished in the routine application of established principles of design. In the case of *American Road Mach. Co. v. Pennock*, 164 U. S. 26, 17 S. Ct. 1, 41 L. Ed. 337, Mr. Chief Justice Fuller held:

"It appears to us that, it being seen that the tendency to reverse would prove objectionable in the proposed machine, the suggestion that the handwheels should be made heavier in order, by greater momentum, to correct that tendency, as it was well known increase in weight coupled with adequate rotative force would,

sprang naturally from the expected skill of the maker's calling, and that this use of the heavier wheel did not make the mechanism in any proper sense a new thing evolved by the inventive faculty.

"The substitution of the heavier wheel was not the product of a creative mental conception, but merely the result of the exercise of 'the ordinary faculties of reasoning upon the materials supplied by a special knowledge, and the facility of manipulation which results from its habitual and intelligent practice'." (pp. 41-42.)

Where the Fundamental Organization is Old and Public Property, a Patent which Attempts to Repatent such Organization by Merely Adding Improved Elements or Adjustments is Invalid. The Patentee has Mistaken his Remedy.

The views of this Court for so many years as consistently expressed in its decisions, as we understand them, are to the effect that mere multiplicity of elements does not make a combination. This was particularly so held in the case of *Richards v. Chase*, 158 U. S. 299. All elements must so enter into the combination so that each qualifies the other. To mount an adjustment upon a machine to get it ready for its main operation is not such a modification. *Pickering v. McCullough*, 104 U. S. 310, 26 L. Ed. 749. The mere increase in speed of manufacture and in greater uniformity of product does not make invention. *Thropp's & Sons Co. v. Seiberling*, 264 U. S. 320. Tested by these well known standards the mere improvement in adjustments in this old combination can scarcely rise to the dignity of invention.

The patentee's mistake was in patenting an old combination instead of patenting the invention he had made.

Merely Securing "An Improved Result" is not Enough to Spell out Invention.

It is not enough that the functions of a new and useful apparatus give an improved result. The making of better

shoes is a step in that direction, but that is not invention. Many things are novel and have utility which are the natural result of sound engineering and the steady progress of the useful arts by artisans without reaching that limited ground where we find the work of creative genius. This Court has so held in the recent case of *Cuno Engineering v. Automatic Devices*, 62 S. Ct., 37, where this Court said:

"We may concede that the functions performed by Mead's combination were new and useful. But that does not necessarily make the device patentable. Under the statute (35 U. S. C. 31; R. S. 4886) the device must not only be 'new and useful,' it must also be an 'invention' or 'discovery.' *Thompson v. Boisselier*, 114 U. S. 1, 11. Since *Hotchkiss v. Greenwood*, 11 How. 248, 267, decided in 1851, it has been recognized that if an improvement is to obtain the privileged position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art * * * 'Perfection of workmanship, however much it may increase the convenience, extend the use, or diminish expense, is not patentable.' *Reckenderfer v. Faber*, 2 Otto 347, 356-357. * * * That is to say the new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling. If it fails, it has not established its right to a private grant on the public domain." (pp. 40-41.)

All McFeely did was to substitute old adjustable means for other old means and then patent these adjustments as a part of an old combination. What he did was nothing more than the skill of the mechanic—it was not invention. *Essex Razor Blade Corp. v. Gillette Safety Razor Co.*, 299 U. S. 94, 98.

"Independent Functioning of an Improved Element" no Ground for Remonopolizing Expired Combination.

When old elements are put together in a new partnership, they must produce something more than mere improvement or new function of the improved elements

added to the old ones. The group must produce something more than merely the sum of the results of the separate parts. That is all the second McFeely accomplished; the adjustments were merely additive. No new result was obtained: perhaps more shoes, the ability to work on more sizes, the production of better shoes resulted—but these things are engineering and manufacturing accomplishments. We again return to the apt statement on this point in *Lincoln v. Stewart-Warner*, 303 U. S. 545, this Court saying:

“We said that if Gullborg had invented anything he had invented an improved pin fitting and an improved coupler and that to allow him to claim either in combination with old elements which performed no new function, would be to permit him to extend the monopoly of his invention to those old and well-known devices.” (p. 548.)

That is the situation in this case. If McFeely invented anything, his invention was in the adjustable features. However, they were old and were not invented by him. But even if new, to allow him to claim them in combination with old elements which performed no new function, would be to permit him to extend the monopoly of his invention to a broad combination previously dedicated to the public.

In *Grinnell v. Johnson*, 247 U. S. 426, this Court cited *Hailes v. Van Wormer*, 20 Wall. 353, 368, from which it quoted:

“But the results of the combination must be a product of the combination, and not a mere aggregate of several results, each the complete product of one of the combined elements.” (p. 432.)

This Court then said:

“No new function is ‘evolved from this combination’; the new result, so far as one is achieved, is only what arises from the well-known operation of each one of the elements.

"In the gearing specified every element is old. The operations of the wringer and the washing machine, although simultaneous, are independent one of the other." (p. 433.)

And again at p. 434:

"Phillips may have produced a more convenient and economical mechanism than others who preceded him, but superiority does not make an aggregation patentable. *Specialty Manufacturing Co. v. Fenton Metallic Manufacturing Co., supra.*"

In *Pickering v. McCullough*, 104 U. S. 310, cited in *Cuno Engineering v. Automatic Devices*, 62 S. Ct., 37, this Court covered the present situation saying:

"In a patentable combination of old elements, all the constituents must so enter into it as that each qualifies every other; to draw an illustration from another branch of the law, they must be joint tenants of the domain of the invention, seized each of every part, **per my et per tout**, and not mere tenants in common, with separate interests and estates." (p. 318.)

McFeely's old elements do not operate simultaneously, but **the adjusting means are set for a given size of shoes before lasting takes place.** Thereafter the machine operates without further adjustment until a new size of shoe is to be worked upon. No further adjustment is made until another size of shoe is to be lasted. If the same size of shoe is to be lasted for a month or for a year, no adjustment would be made for that period. This establishes that the functioning of the adjustments is independent of the lasting functions of the machine. The adjustments and the lasting machine do not qualify or modify each other: when once adjusted, the adjusting mechanism could be thrown away without affecting the lasting operation. The claims are void because the elements are not "joint tenants of the domain of the invention" covered by the claims: the adjustments have "separate interests and estates" from the lasting machine in its lasting operation.

POINT II.

AGGREGATION: ANOTHER FORM OF AN ATTEMPT TO REPATENT EXPIRED OLD COMBINATIONS.

When an attempt is made to patent an aggregation of two or more elements or old combinations, it is another form of attempted monopoly extension over what has gone into the public domain. Engineering contributions in the common store of knowledge of an industry **cannot be re-dedicated to monopoly without the justification of a new function or a new result from the new teamwork of parts in a new combination**; without such new function or new result there is aggregation because there is only the sum of results, and the associated mechanisms still stay within the public domain. Mere improvements in result or economy of greater success cannot revitalize an aggregation into an invention.

All that McFeely did in the second patent was to substitute in the expired first McFeely patent the prior art adjustments which were old and public property. If there were improvement, it was but the improvement by adding the better adjustments. The operation of the adjustments and the heel seat lasting are not simultaneous but are entirely separate and are independent of one another. There is no true cooperation to make a patentable combination. No new, and useful result is produced by the second McFeely patent from the "cooperating action of the elements."

In the *Grinnell v. Johnson* case, 247 U. S. 426, this Court said:

"The question is, does this bringing together of old elements accomplishing the purposes stated amount to that combination which is invention within the meaning of the patent law; or does the gearing device, thus applied and used, show only an aggregation of old elements performing well-known functions, producing no novel and useful result entitling the aggregation to the protection of a patent?" (pp. 431-2.)

"Applying the rule thus authoritatively settled by this court, we think no invention is shown in assembling these old elements for the purposes declared. **No new function is 'evolved from this combination'; the new result, so far as one is achieved, is only that which arises from the well-known operation of each one of the elements.**" (p. 433.)

The Court of Appeals of the Sixth Circuit erred in sustaining the second McFeely patent because of additions to the expired first McFeely patent of prior art adjustments to make the machine more versatile and in holding that the rule of this Court against extending a patent monopoly applies only when the improvement is in quantity or quality of the product. This ruling is contrary to *Grinnell v. Johnson, supra*, in which this Court held that convenience, economy and superiority do not make an aggregation patentable. The Court said:

"* * * Phillips may have produced a more convenient and economical mechanism than others who preceded him, but superiority does not make an aggregation patentable. Specialty Manufacturing Co. v. Fenton Metallic Manufacturing Co., supra. The assemblage of the old elements, and their operation in the manner indicated, may save time, and the mechanism may meet with a readier sale than other similar devices, but these things may result from mechanical skill and commercial enterprise, and do not necessarily involve invention." (p. 434.)

In *Specialty Mfg. Co. v. Fenton*, 174 U. S. 492, 498, *supra*, this Court said:

"Hoffman may have succeeded in producing a shelf more convenient and more salable than any which preceded it, but he has done it principally, if not wholly, by the exercise of mechanical skill."

So also the late case of *Toledo Co. v. Standard Parts*, 307 U. S. 350, the patent covered a burner for use in outdoor warning signals such as torches and truck flares. The specification stated that the purpose of the invention was

to increase efficiency and to reduce flame extinguishment by wind and rain, to a minimum.

“The torch body was old in the art to which it belonged. The cap, as part of devices used in other fields, was old and useful to prevent extinguishment of flames by wind or rain and to permit flames to extend through holes to the open air. The problem patentees set for themselves was to prevent extinguishment while preserving usefulness of the flames as warning signals. They solved it by merely bringing together the torch and cap. As before, the torch continued to produce a luminescent, undulating flame, and the cap continued to let in air for combustion, to protect the flame from wind and rain and to allow it to emerge as a warning signal. They performed no joint function. Each served as separately it had done.” (355-6.)

That is exactly the situation as to the McFeely patent in suit. The lasting mechanism was all old in the first expired McFeely patent. (R. Vol. 2, p. 266.) The machine of that patent successfully lasted shoes. All that McFeely did in the patent in suit was to take the old lasting machine of the first McFeely patent and substitute the old adjustments of such patents as Copeland, No. 244,714 (Rec. Vol. 2, p. 114), Lombard, No. 524,445 (Ib. 122), Eaton, No. 596,323 (Ib. 134), Brock, No. 601,935 (Ib. 140), Plant, No. 958,280 (Ib. 180), Brock, No. 188,616 (Ib. 384), Pym, No. 1,368,968, Fig. 10 (Ib. 452), Pym, No. 1,368,968 (Ib. 440), and Snow, No. 946,708 (Ib. 172).

On such a state of facts this Court, in *Toledo Co. v. Standard Parts*, *supra*, said:

“The patented device results from mere aggregation of two old devices, and not from invention or discovery. *Hailes v. Van Wormer*, 20 Wall. 353, 368. *Reckendorfer v. Faber*, 92 U. S. 347, 357. *Lincoln v. Stewart-Warner Corp.*, 303 U. S. 545, 549-50. On the records before us, it is impossible to hold that production of the patented device required more than mechanical skill and originality attributable to those fa-

miliar with the art of protecting flames of kerosene and other burners. *Altoona Theatres v. Tri-Ergon Corp.*, 294 U. S. 477, 486; *Powers-Kennedy Co. v. Concrete Co.*, 282 U. S. 175, 186; *Concrete Appliances Co. v. Gomery*, 269 U. S. 177, 184, 185; *Hollister v. Benedict & Burnham Mfg. Co.*, 113 U. S. 59, 72, 73." (p. 356.)

This Court did not limit the restriction against extending the monopoly by improving one part of an old combination to cases in which the second patent covers a mere improvement in quantity or quality of the product. The true rule as set forth in *Bassick v. Hollingshead*, 298 U. S. 415, is that, although an element is improved in an old construction, the patent is invalid. The evil lies in re-monopolizing a publicly dedicated heel seat lasting machine.

"The question is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other Federal Courts." (p. 425.)

That is exactly what McFeely has done. McFeely took the substituted adjustments from the prior art. This does not render the combination patentable; the approval of such a course, by the Court of Appeals below, makes this Court's decisions ineffective in applying the applicable rule.

This decision of the Court of Appeals is directly contrary to the very recent decision of this Court in *Cuno Engineering v. Automatic Devices*, 62 S. Ct. 37.

"We may concede that the functions performed by Mead's combination were new and useful. But that does not necessarily make the device patentable. Under the Statute 35 U. S. C. Sec. 31, 35 U. S. C. A. Sec.

31, R. S. Sec. 4886, the device must not only be 'new and useful,' it must also be an 'invention' or 'discovery.' *Thompson v. Boisselier*, 114 U. S. 1, 11, 5 S. Ct. 1042; 1047, 29 L. Ed. 76. Since *Hotchkiss v. Greenwood*, 11 How. 248, 267, 13 L. Ed. 683, decided in 1851, it has been recognized that if an improvement is to obtain the privileged position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art. (Cases cited) * * * 'Perfection of workmanship, however, much it may increase the convenience, extend the use, or diminish expense, is not patentable.' *Reckendorfer v. Faber*, 92 U. S. 347, 2 Otto 347, 356, 357, 23 L. Ed. 719. * * * (Cases cited). 'That is to say the new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling. If it fails, it has not established its right to a private grant on the public domain.' (pp. 40, 41.)

• The claims of the McFeely patent in suit, being for an aggregation of old devices and the adjustable features relied upon not affecting the operation of the other parts with which they are used, are void. Respondent says the McFeely construction under the instant patent, makes more shoes and lasts them more uniformly with greater perfection of workmanship. Under the law as we understand it, this is not invention.

Where Adjustments and the Subsequent Operation After Adjustments are Entirely Separate and Independent of One Another: It is Only Aggregation.

In the McFeely patent in suit, if you wish to adjust the fore and aft position of the heel band, you do so by moving the handle 92. If you wish to predeterminately adjust the wipers, you move the handle 270. If you wish to adjust the hold-down, you move the stop nut adjacent head 208. Thereafter, having made the adjustments, the machine operates in the lasting operation in the same way irrespective of the adjustments. The lasting operation is merely accommodated to the particular sized shoe by these ad-

justments. The operations of adjustment and the operations of lasting, are entirely independent of one another. The lasting machine would work with or without such adjustments so far as the lasting operation is concerned.

In *Grinnell v. Johnson*; 247 U. S. 426, the patent covered a washing machine operated by an electric motor. The power shaft rotated the dolly in the washer. The power shaft was also geared to a wringer. A clutch sleeve was provided so that the wringer rolls could be reversed by shifting the clutch sleeve and adjustments could be thus made to work the dolly or wringer. After stating that an aggregation of elements is not patentable, this Court said:

“Applying the rule thus authoritatively settled by this court, we think no invention is shown in assembling these old elements for the purposes declared. No new function is ‘evolved from this combination;’ the new result, so far as one is achieved, is only that which arises from the well-known operation of each one of the elements.

“In the gearing specified every element is old. The operations of the wringer and washing machine, although simultaneous, are independent one of the other.” (p. 433.)

The McFeely patent is more of an aggregation—if we may have a comparative of the term—than was the patent in the *Grinnell* case. In McFeely there is never any simultaneous action of the adjusting means and the other old features of the combination. Their actions are always independent and they do not qualify the operation of each other. The lasting features always operate the same regardless of the adjustments, after the adjustments are made—there is no simultaneous operation.

Increasing the Versatility of a Machine Does Not Convert Aggregation into an Invention.

The merit claimed for the McFeely patent in suit, is that it is a more versatile machine operating on a wider

range of shoes than the first McFeely machine. To what extent it operated on a range of shoes greater in size than the first McFeely patent, is not accurately shown. The respondent's proof was silent on that point, although all the information on the subject was exclusively within its possession.

Merely improving utility does not raise a structure to the rank of an invention. The daily activities of competitive manufacturing and engineering establishments are constantly devoted to increasing the utility of everything that is being manufactured and sold. To hold that comparative utility is a sign of invention would be to throttle rather than promote progress. In the case of *Grant v. Walter*, 148 U. S. 547, 13 S. Ct. 699, 37 L. Ed. 552, Mr. Justice Jackson held:

"The advantages claimed for it, and which it no doubt possesses to a considerable degree, cannot be held to change this result, it being well settled that utility cannot control the language of the statute, which limits the benefit of the patent laws to things which are new as well as useful. The fact that the patented article has gone into general use is evidence of its utility, but not conclusive of that and still less of its patentable novelty." (p. 556.)

This Court repeated this view in *Grinnell v. Johnson*, 247 U. S. 426. It said:

"Phillips may have produced a more convenient and economical mechanism than others who preceded him, but superiority does not make an aggregation patentable. *Specialty Manufacturing Co. v. Fenton Metallic Manufacturing Co.*, *supra*, 174 U. S. 492." (p. 434.)

Superiority of Result or Economy in Results do Not Make an Invention.

If we rely upon the shadowy distinction of a superior result from a machine as the test of invention, we would have to do the difficult thing of ascertaining how much of

this perfection was due to engineering, how much to sound artisanship and how much to wise selection of materials, and then try to value what is left as invention. Obviously, these complex features so far dominate in a superior result, that invention usually plays a shadowy part in the matter. This is particularly true where the patent under consideration comes at the end of sixty years of steady perfection and detailed improvement in a crowded art; and the machine embodying the alleged invention is that of the most skilled manufacturer in the industry with the greatest number of engineers and designers, as in the case of United Shoe Machinery Corporation. Certainly a generous share of the credit for perfection of result, under such circumstances, must be given to things other than the McFeely three minor adjustments, which at best are claimed by McFeely as mere improvements on old adjustments of the same kind in the first patent. There is nothing here in the second McFeely beyond the skill of the calling that has had sixty years to perfect itself as evidenced by the voluminous prior art, mainly owned by the respondent. The following statements from *Altoona v. American et al.*, 294 U. S. 477, 55 S. Ct. 455, 79 L. Ed. 483, we believe are particularly appropriate to this case where this Court said:

“An improvement to an apparatus or method, to be patentable, must be the result of invention, and not the mere exercise of the skill of the calling or an advance plainly indicated by the prior art. *Electric Cable Joint Co. v. Brooklyn Edison Co.*, 292 U. S. 69, 79, 80. * * * The patentees brought together old elements, in a mechanism involving no new principle, to produce an old result, greater uniformity of motion. However skilfully this was done, and even though there was produced a machine of greater precision and a higher degree of motion-constancy, and hence one more useful in the art, it was still the product of skill, not of invention. *Hailes v. Van Wormer*, 20 Wall. 353, 368; *Grinnell Washing Machine Co. v. Johnson Co.*, 247 U. S. 426, 432-434; *Powers-Kennedy Contracting Corp.*

v. Concrete Mixing & Conveying Co., 282 U. S. 175, 186." (p. 486.)

In *Cuno Engineering v. Automatic Devices*, 62 S. Ct., 37, this Court noted from *Reckendorfer v. Faber*, 92 U. S. 347, 2 Otto 347, 356, 357, 23 L. Ed. 719 as follows:

" 'Perfection of workmanship, however much it may increase the convenience, extend the use; or diminish expense, is not patentable.' " (p. 40.)

POINT III.

COMMERCIAL SUCCESS.

Commercial Success Not Essential to Anticipation by Prior Art.

The Court of Appeals below founded its decision on the fact that as between the first McFeely patent and the second, **the second was more successful commercially than the first.** It said that one machine was built in accordance with the first McFeely and:

"Although the machine successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory. * * *" (R. 510, Vol. 1.)

Then the Court on this ground discarded the first McFeely patent as anticipation because a failure.

This we submit is contrary to the doctrine established by this Court in *Smith v. James* and *Smith v. Hall*, 301 U. S. 216, and numerous other cases. Anticipation cannot be decided on the basis of comparative commercial success between the anticipating structure and the structure of the patent in suit. Even though the anticipating patent structure is not commercially successful, it is still an anticipation if it has already disclosed the principles of the invention to the public. Likewise, reliance upon commercial success is an unsafe ground to sustain a broad monopoly, and is only resorted to in cases of doubt, but even then such

proof can be no substitution for a lack of invention over the prior art, as in this case.

Textile Machine Works v. Louis Hirsch Textile Machines, Inc., 302 U. S. 490-498-499;

Paramount Publix Corp. v. American Tri-Ergon Corp., 294 U. S. 464-474;

Altoona Publix Theatres, Inc. v. American Tri-Ergon Corp., et al., 294 U. S. 477-486;

DeForest Radio Co. v. General Electric Co., 283 U. S. 664;

Grant v. Walter, 148 U. S. 547-556.

The Court of Appeals founded its decision on the contrary principle to that established by this Court, that is, that even if the anticipating structure operated successfully, if the machine of the patent in suit was *more* commercially successful, then there could be no anticipation. On this the Court said:

"The first McFeely patent contributed little to the art. But one machine was ever built in accordance with its disclosures and this was sent by the appellee to the Victor Shoe Company for test in the lasting of heel seats under commercial conditions, subject to an arrangement by which no charge should be made to the Victor Company for the work done on the machine, and that any shoes spoiled in its operation should be paid for by the appellee. **Although the machine successfully lasted shoes of specific sizes**, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory, and after it had been tested for a period it was returned to the manufacturer, was dismantled, and no other similar machine was ever built. On the other hand, the automatic heel lasters of the patent in suit have gone into wide use, the court finding that more than 1200 of such machines had been in operation throughout the world, and both litigants agree that they are complicated and expensive. Between commercial success demonstrated by brief use

of a single machine abandoned and not duplicated, and commercial success of the machine of the second patent, there yawns a wide gulf not to be bridged merely by insistence that the second McFeely patent advanced the art but in minor and inconsequential details." (R. Vol. 1, p. 510.)

This Court, in *Smith v. James, supra*, however, held that commercial success of anticipating prior use structure, is unnecessary. In that case this Court said as to the Hastings prior use:

"It is immaterial that his structure for using the method was neither the best possible nor as skilfully designed or used as that later employed by Smith. *Pickering v. McCullough*, 104 U. S. 310, 319; cf. *Telephone cases*, 126 U. S. 1, 531, 536." (p. 232.)

With reference to the Hastings Brooklyn and Muskoguee prior uses, this Court said:

"* * * the fact that both incubators functioned, are convincing evidence that Hastings knew and used in appropriate combination, both in Brooklyn and in Muskoguee, the essential elements of the Smith claim." (pp. 232-3.)

"He knew the method and used it in a device capable of employing it. In such circumstances want of commercial success, which the record suggests may have been due to lack of technical and business skill, is not an indication that there was no prior use." (p. 233.)

A late comer who perfects the earlier idea, is not an inventor. The only difference was that the second McFeely could handle more sizes than the first McFeely, but the last-
ing operation and even the type of adjustments were identical in both. It is, of course, immaterial that the second McFeely did a more perfect job of making shoes. In *Hildreth v. Mastoras*, 257 U. S. 27, 34:

"It is not necessary, in order to sustain a generic patent, to show that the device is a commercial success. The machine patented may be imperfect in its opera-

tion; but if it embodies the generic principle, and works, that is, if it actually and mechanically performs, though only in a crude way, the important function by which it makes the substantial change claimed for it in the art, it is enough."

As between the first McFeely and the second McFeely the first is generic and the Court of Appeals found that it "successfully lasted shoes" but not in as wide a range of commercial sizes. Defendant's Exhibit H-2 establishes that the machine of the first McFeely patent was commercially successful. (See quotations R. Vol. I, pp. 471-73.) In the affidavit of Russell (R. Vol. I, pp. 475, 476), plaintiff-respondent admitted that shoes were made upon a machine of the first McFeely patent and were sold as a part of the commercial product of the maker. It was also admitted that this machine was for automatic heel seat lasting and that many shoes were commercially lasted on this machine of certain particular sizes.

Certainly the Court of Appeals erred in disregarding this Court's decision to the effect that commercial success is not a necessary factor in order to make an anticipating machine; and in not holding the patent void in view of the decisions of this Court against repatenting old combinations.

Respondent's Claims as to its First McFeely.

Respondent founded his case on the representation in the District Court that "the original McFeely was never built, your Honor. The old McFeely patent this witness was talking about, 1,129,881, is the patent which I said was impractical and never used, and the patent in suit purports to improve on that patent in certain respects, * * *." (Statements by respondent's counsel at trial, R. Vol. I, p. 396.)

The defendant was taken by surprise at the position of this plaintiff in denying its own fundamental patent in view

of the fact that the construction of this first McFeely patent was repeatedly adopted as the fundamental, successful construction upon which the second McFeely patent was founded as witness the specification of the second McFeely (p. 1, ll. 18-20; p. 3, ll. 19-23; 84-88; p. 12, ll. 22-24) saying that the second patent merely improved on the first. It was also apparent from examining the plaintiff's machines, Exs. 4 and 7, that the first McFeely was the very essence of those machines to which had been added only the upwiping feature of the second McFeely patent and the modifications of the respondent's Hoyt and Jorgensen patents of the plaintiff which went to "detailed" constructions.

We quote from the file wrapper of the first McFeely patent, and also quote from a reply Affidavit of this respondent when this file wrapper was offered in evidence in this case as Ex. H-2 and considered by the Circuit Court of Appeals.

Statements of United Shoe Machinery Corporation in File Wrapper of First McFeely, Specification in Second McFeely; and Respondent's Reply Affidavit in this Case. (R. Vol. I, pp. 472-3: 475-6.)

"* * * that from the said layout drawing detail drawings were made and a full-sized operative machine was constructed which has been employed for lasting heel seats **in the ordinary course of manufacture of many pairs of shoes**"; (Oath of McFeely executed Nov. 24, 1914, first McFeely file wrapper, p. 183.)

"That he has read the accompanying affidavit of said McFeely and believes the same to be true." (Affidavit of Arthur L. Russell corroborating the McFeely affidavit of November 24, 1914 as to successful commercial use; page 184, first McFeely file wrapper.)

"It should be recognized at the beginning of this case that applicant is the first inventor ever to have produced a successful heel seat lasting machine and," etc. (United Shoe attorney in file wrapper of first McFeely, p. 141, in 1913.)

"This application is therefore entitled to such liberal treatment from the Patent Office Examiner as it may be expected that the patent will receive, under these circumstances, from the courts because of its fundamental position in the heel seat lasting art. **An absolutely pioneer invention** is defined by those claims which recite an assembling and heel seat lasting machine because *no one in the art has ever disclosed an organized machine for this work.*" (p. 141, first McFeely file wrapper.)

"There appears to be no dispute about the novelty of the combinations recited in these claims and if the utility of the combination were challenged, applicant would bring forward **conclusive evidence of the greatly improved results** obtained by tensioning the upper forwardly and lasting the heel seat while the tension is maintained as herein described." (p. 143, first McFeely file wrapper.)

"Neither that inventor nor any one else during more than a quarter of a century had the constructive genius to see that such forward pulling and holding mechanism and heel seat lasting mechanism as applicant has combined could be **correlated in an organized machine and made to produce important results in shoemaking.**" (p. 144, first McFeely file wrapper.)

"As applicant is advised, the combination of lasting means and a back stop with adjusting and indicating means as required has not before been shown in the lasting machine art." (United Shoe attorney in file wrapper of first McFeely, p. 124.)

"In Fig. 18 the back stop shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 having marked on it graduations indicating **the proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes.**" (Lines 79-88, p. 4 of first McFeely patent.)

"Applicant takes the position that this combination is a new and patentable invention involving a material

advance in the shoemaking art and **affording practical results of very substantial value** and therefore, in the absence of other references, he must request the allowance of the claims above mentioned." (United Shoe attorney in file wrapper of first McFeely, p. 114.)

"As to general structure, power transmission and automatic control the machine shown herein corresponds to the machine shown in my patent No. 1,129,881, previously referred to." (Lines 19 to 23, p. 3 of second McFeely patent.) (R. Vol. I, p. 15.)

"The machine was, as stated in the arguments made in the file wrapper, 'a pioneer invention,' in that it was the **first machine for automatic heel seat lasting, and many shoes were successfully lasted upon it, of certain particular sizes.**" (Russell Reply affidavit filed by Respondent.) (R. Vol. I, p. 476.)

The District Court refused such proof as being offered too late, although it was tendered before argument and decision of the case; the proof was considered by the Circuit Court of Appeals. We ask this Court to compare the statements in this filewrapper and this late Affidavit, with the original representation of this respondent by its counsel "the original McFeely was never built, Your Honor" (R. Vol. I, p. 396) as the reason for discovering the first McFeely as an anticipating patent, and also weigh the respondent's statements now that the first machine was not successful, against its sworn statements to the contrary when it was seeking the first patent from the Patent Office.

As a matter of equity, we submit that the respondent is estopped to claim that its first machine of its first patent was not a commercial success in the making of shoes of various sizes in quantity successfully on such an undisputed record of the respondent's own making. Statements against interest in a filewrapper are binding against this respondent. *Schriber-Schroth Co. v. Cleveland*, 311 U. S. 211. However, it makes no difference as a matter of law, whether the first machine was successful or not commer-

cially: the second patent in suit recognized it as being the same machine except for the minor improvements of the improved adjustment, and anticipation does not depend on commercial success.

In conclusion, we submit that in a Court of Equity the proof of the truth is never too late—the Chancellor's conscience requires it and the public's interest demands it.

“The public is always a third party to an infringement suit, and its rights may not be waived * * *.”

Kellogg v. Michigan, et al., 99 F. (2d) 203 (C. C. A. 6);

Commercial v. Fulton, 93 F. 621 (C. C. A. 2); and *Paxson v. Board*, 201 F. 656 (C. C. A. 3).

Equally, frankness with a Court by a plaintiff is a prerequisite to a favorable judgment. The applicable rule, as we understand it, is that stated by this Court as to the duty of a party where it said in *Keystone v. General Excavator Co.*, 280 U. S. 240-44-45:

“He must be frank and fair with the Court, nothing about the case under consideration should be guarded, but everything that tends to a full and fair determination of the matter in controversy should be placed before the Court.”

Worden v. California Fig Syrup Co., 187 U. S. 516-528.

Commercial Success is Not the Measure of Invention: Unpatentable Combinations Often have Great Success and Great Inventions Often Fail Commercially.

To hold otherwise would substitute commercial success for inventive talent and the diligence of the salesman for the genius of the inventor. The object of invention is to teach the public how to make a new combination or secure a new result which is patentable, or both: the crudity of the suggestion is not important.

There is no additional requisite that the inventor must have the skill of the successful manufacturer, be versed in the arts of salesmanship, and have the sound business judgment of the financier. If commercial success were the test of invention, we would compare the balance sheets of businesses and not compare patents and the state of the art. This Court has long held that the commercial factor is of little weight because so many factors other than invention enter into commercial success, and if the earlier inventor has made his invention disclosures, which are useful even in a limited degree, he has opened the door for successful exploration of his ideas for the public benefit by the skilled manufacturer equipped with all the engineering and mechanical aids usually denied to an inventor in the early stages of a pioneering enterprise.

Heel seat lasting machines with their thousands of parts, which are the result of the countless efforts of many workers in this art for sixty years, are impressive machines to those who forget that these machines were not the creation of the patent in suit: the lower Courts who saw them were accordingly impressed. The patent in suit came only at a time at the end of this long development period of sixty years and contributed nothing but those meticulous refinements characteristic of a well worked industry.

Embodied in such machines are the patient toil and efforts of countless engineers and manufacturers for sixty years in an endeavor to perfect, adjust and speed up by engineering and manufacturing skill an old combination of parts securing a result that was conceived by Copeland sixty years ago. To assume that all this is due to the last McFeely patent is to give the last comer the awards of the pioneer and to shut out the public from its rightful public domain. Herein lies the error of the Courts below: they mistook the physical embodiments before their eyes at the end of the period for the patent in suit because that patent had wrongfully remonopolized all that had gone before and

was long since the public's. Such are the evils of the type of claims we seek to defeat here!

As said in the concurring opinion of Mr. Chief Justice Stone in *Cuno Engineering v. Automatic Devices*, 62 S. Ct. 37 with reference to the improvements claimed in the Mead patent:

"* * * If they exhibited only the skill of the art their success cannot be relied on to establish invention by Mead * * *." (p. 42.)

In *Toledo Co. v. Standard Parts*, 307 U. S. 350, this Court held that commercial success is without significance in a case like this. It said:

"Lack of novelty being clearly shown, acceptance of license under the circumstances of this case, is without weight. *Thropp's Sons Co. v. Seiberling*, 264 U. S. 320, 330. *John T. Riddell v. Athletic Shoe Co.*, 75 F. (2d) 93, 95. And similarly without significance on the question of novelty is the fact that, as plaintiff claims, utility resulted and commercial success followed from what patentees did. *Firestone Tire & Rubber Co. v. U. S. Rubber Co.*, 79 F. (2d) 948, 954." (pp. 356-7.)

Additionally, as in *Thropp v. Seiberling*, 264 U. S. 320-28-29, the mere fact that you are able to speed up production by refinements in a machine or by more perfect workmanship or better engineering design, to get a more uniform product, is no indication of invention.

"* * * In the making of tires, it has in fact resulted, because of the use of power, in speed of manufacture and possibly in some greater uniformity of the product. But the record does not show that there has been substantial change in the mechanics or method of making. The steps are the same and the succession from one to the other are as in the manual art, and the transfer from hand to power was by the usual appliances and had all been indicated before the State patent.

"These conclusions as to the lack of novelty in the elements and combinations of the State patent were

reached by the Circuit Court of Appeals for the Sixth Circuit and we agree with them."

The primary claim for the second McFeely is that it turned out shoes of greater uniformity with less variation due to the human element, and more of them. This, we submit is the expected contribution of engineers and manufacturers in refining a production machine in details after sixty years of effort from the original disclosure by Copeland of all the essentials of heel seat lasting machines. The public is entitled to some liberty of action for its designer and manufacturers because otherwise the disclosure of such an inventor, as Copeland, would be of no public advantage.

It follows that any commercial success claimed for McFeely is of no consequence because the patent is clearly void.

POINT IV.

PUBLIC IMPORTANCE.

Twelve hundred of the machines embodying the McFeely patents are under lease by the respondent. (R. Vol. I, 399, 483.) As automatic heel seat lasting is one of the fundamental features of shoe making, the tribute upon the shoe industry which must inevitably be reflected in the cost of shoes, thereby very gravely affects the public interest. **Only one with the clearest title to monopoly should have this generous reward under such circumstances.**

Respondent already stands condemned by the Circuit Court of Appeals for the Sixth Circuit for attempting to extend its monopoly on this same mechanism in the Hoy patent in suit No. 1,508,394. (R. Vol. I, p. 513.) The action of respondent in abandoning the application in the United States Patent Office of the second McFeely patent in suit for ten months and then reviving it, is another phase of what was heretofore the prevalent practice of extending a monopoly. This Court stopped one phase of such a practice in *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincol*

v. Stewart Warner Corp., 303 U. S. 545. • Congress has recently rendered illegal the practice of extending monopoly by abandonment and revival. U. S. C. A., Title 35, Sec. 41, provides that a patent shall be withheld unless the final fee is paid within six months after the allowance of the application except that the Commissioner in his discretion may receive the final fee during the year following the six month period.

The large number of patents of this respondent, many of which are in this record, make it essential to the public interest that this vast monopoly over the shoe industry be limited strictly in accordance with the principles announced by this Court. The respondent has followed the practice of building one patent upon another. The second McFeely patent specifically states that it is the same as the first McFeely patent *except* for the *improved* adjustments and the addition of the feature of upwiping, which in itself was old. But it was not content to *claim* these specific improvements: it reclaimed the entire combination including the specific improvement, just as if it were a virgin discovery. A glance at other patents of the respondent in this record will show that this practice has been followed in other of its patents, that is, building one patent upon another *ad infinitum*. This practice will not serve the public.

Let us look at a practical situation in the designing room of a manufacturer to see how a patent like this disturbs the public interest. Engineers and manufacturers who examine expired patents have a right to assume that their subject matter has been dedicated to the public. They have a right, furthermore, to add improvements to this dedicated subject matter to modernize it, make it operate more successfully with greater production, and make it easier to manufacture. They have a right to expect that this monopoly, thus expired, is not going to be remonopolized by the inventor who has had his day of monopoly

and who is doing nothing more in a second patent such as this, than what these engineers are doing in the ordinary course of their day's work. To permit expired patents not to expire by approving the practice of this respondent, as the Circuit Court of Appeals has approved it, in this case, merely means that **no one can be sure that the subject matter of expired patents is accordingly dedicated to the public.** Only long and laborious searches and investigations as to subsequent patents will ever determine whether the old monopoly is at last laid to rest. We ask this Court to continue its charter of freedom for the use of the subject matter of expired monopolies written by this Court into the cases of *Bassick v. Hollingshead*, 298 U. S. 415, and *Lincoln v. Stewart Warner*, 208 U. S. 545. It is only by doing this that we "Promote the Progress of Science and the Useful Arts."

We submit that the public should not be shut off from the use of the fundamentals of heel seat lasting machines, old and public property, by reasons of disclosures made sixty years ago, just because a late comer adds three improved adjustments; and not new adjustments at that. Not a single legal reason has been advanced, that has any foundation in any decision of this Court, why this second McFeely patent should be sustained. The production of more shoes, better workmanship, greater uniformity, greater accuracy, greater speed, a wider range of shoe sizes handled in a single machine, are all contributions of its engineer and manufacturer, and do not come from the flash of genius of the inventor.

It is respectfully submitted that the claims in suit should be held void and the decisions of the Court of Appeals and District Court reversed because:

1. It is unfair to the public to extend a monopoly once enjoyed, that has expired, because no one can know when the contents of an expired patent are actually open to the public to use.

2. It makes no difference whether the improvements inserted in the old combination are new or better or *per se*. It was error to try to protect whatever advantage came from such improvements by attempting to add to them an old combination that the public should have had a right to use and then claim in such old combination such improvements in such general terms as to read upon old adjustments also open to the public. The claims in this case are very general and broad in terms and implications.

Respectfully submitted,

H. A. TOULMIN, JR.,

ROWAN A. GREEB,

JAMES B. O'DONNELL,

Counsel for Petitioner.

Oct. 27, 1925.

R. F. McFEELY
LASTING MACHINE

1,558,737

Original Filed Aug. 16, 1916 6 Sheets-Sheet 1

TACKERS CO-OPERATING WITH WIPERS & HAVING MEANS TO MAINTAIN THEM IN PREDETERMINED RELATION WITH THE WIPER PLATES IN ALL POSITIONS OF ADJUSTMENT

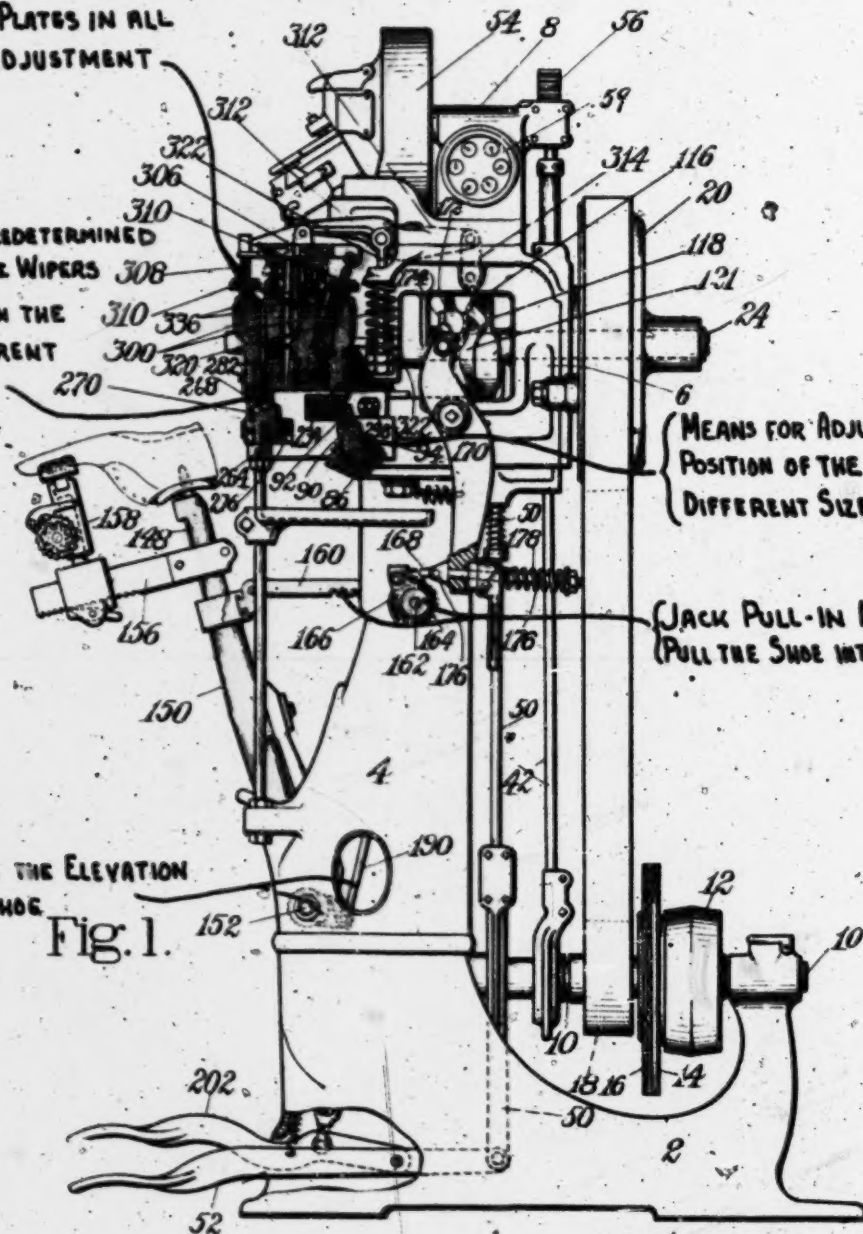
MEANS FOR THE PREDETERMINED ADJUSTMENT OF THE WIPERS TO INITIALLY POSITION THE WIPERS FOR DIFFERENT SIZES OF SHOES

MEANS FOR ADJUSTING THE IN&OUT POSITION OF THE HEEL BAND FOR DIFFERENT SIZES OF SHOES

JACK PULL-IN MECHANISM TO PULL THE SHOE INTO THE HEEL-BAND

MEANS TO CHANGE THE ELEVATION OF THE JACK & SHOE

Fig. 1.



INVENTOR.

Ronald F. McFeely
By his Attorney
Nelson M. Howard

Oct. 27, 1925.

R. F. McFEELY
LASTING MACHINE

1,558,737

Original Filed Aug. 16, 1916 6 Sheets-Sheet 2

TACKERS CO-OPERATING WITH WIPERS & HAVING MEANS TO MAINTAIN THEM IN PREDETERMINED RELATION WITH THE WIPER PLATES IN ALL POSITIONS OF ADJUSTMENT

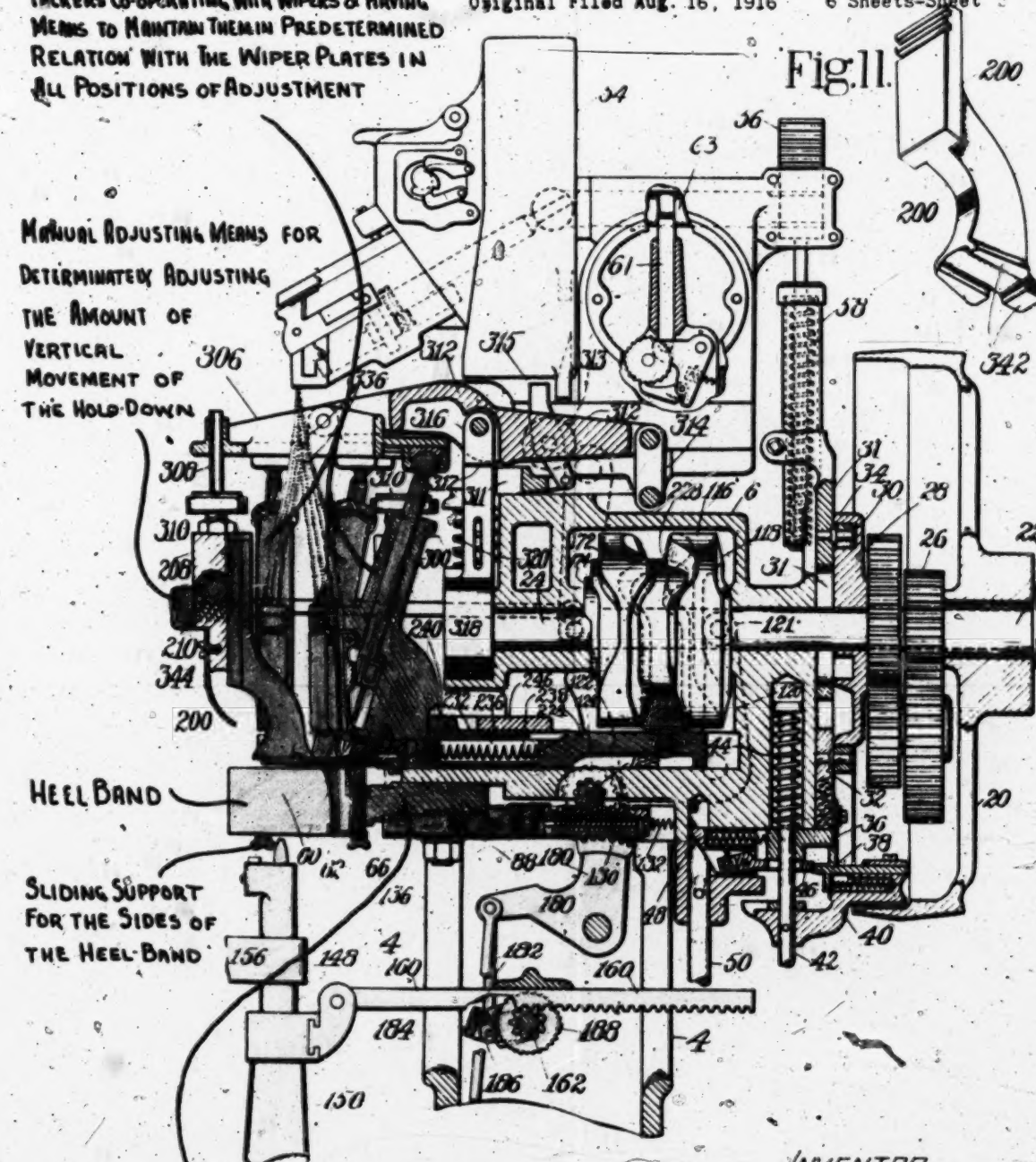
MANUAL ADJUSTING MEANS FOR DETERMINATELY ADJUSTING THE AMOUNT OF VERTICAL MOVEMENT OF THE HOLD-DOWN

HEEL BAND

SLIDING SUPPORT FOR THE SIDES OF THE HEEL-BAND

MEANS FOR ADJUSTING THE IN&OUT POSITION OF THE HEEL BAND FOR DIFFERENT SIZES OF SHOES

Fig. 2.



INVENTOR.

Ronald F. McFeely
By his Attorney
Nelson M. Howard

Oct. 27, 1925.

R. F. McFEELY

LASTING MACHINE

Original Filed Aug. 16, 1916

CAM OPERATED
WIPER SLIDE

YIELDING MEANS FOR PUSHING THE
TACKERS WITH THE WIPERS
INTO SHOE ENGAGING POSITION

BELL CRANK LEVER

Fig. 3.

GEAR

SLIDE

HAND LEVER FOR ADJUSTING
THE WIPERS AND THE TACKERS
INDEPENDENTLY OF THE
POWER MEANS

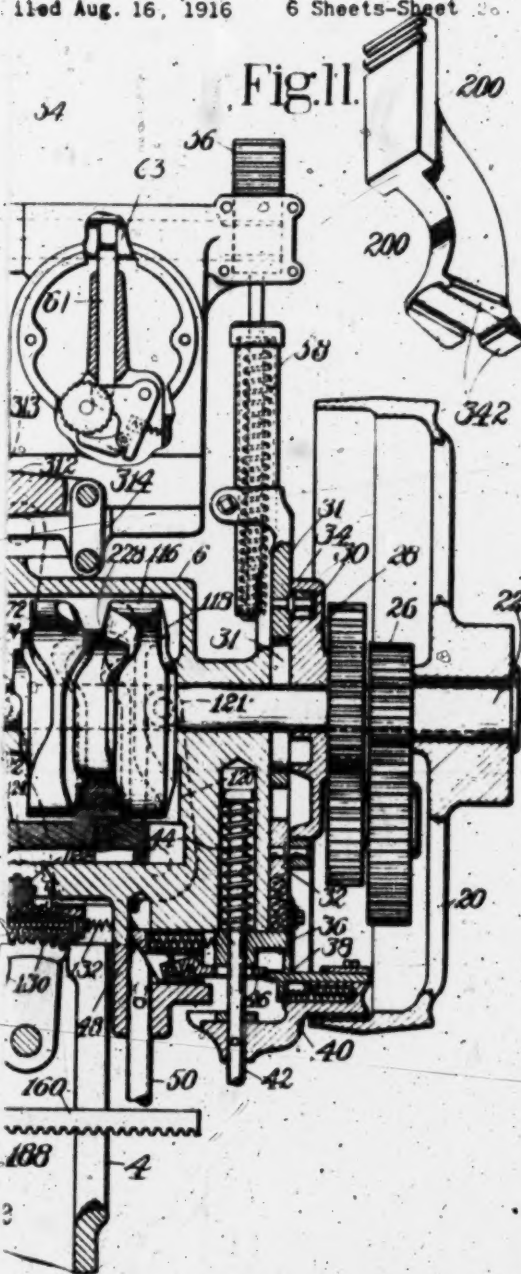
SIDE
TACKING
UNIT

McFEELY

ING MACHINE

Filed Aug. 16, 1916 6 Sheets-Sheet 2

Fig. 11.



INVENTOR

R. F. McFeely
By *his attorney*
Charles H. H. H. H.

Oct. 27, 1925.

R. F. McFEELY

LASTING MACHINE

Original Filed Aug. 16, 1916 6 Sheets-Sheet 3

CAM OPERATED
WIPER SLIDE

YIELDING MEANS FOR PUSHING THE
TACKERS WITH THE WIPERS
INTO SHOE ENGAGING POSITION

BELL CRANK LEVER

Fig. 3.

GEAR

SLIDE

HAND LEVER FOR ADJUSTING
THE WIPERS AND THE TACKERS
INDEPENDENTLY OF THE
POWER MEANS

SIDE
TACKING
UNIT

CORNER
TACKING
UNIT

END TACKING
UNIT

INVENTOR

R. F. McFeely
By *his attorney*
Charles H. H. H.

Oct. 27, 1925.

1,558,737

R. F. McFEELY
LASTING MACHINE

Original Filed Aug. 16, 1916 6 Sheets-Sheet 4

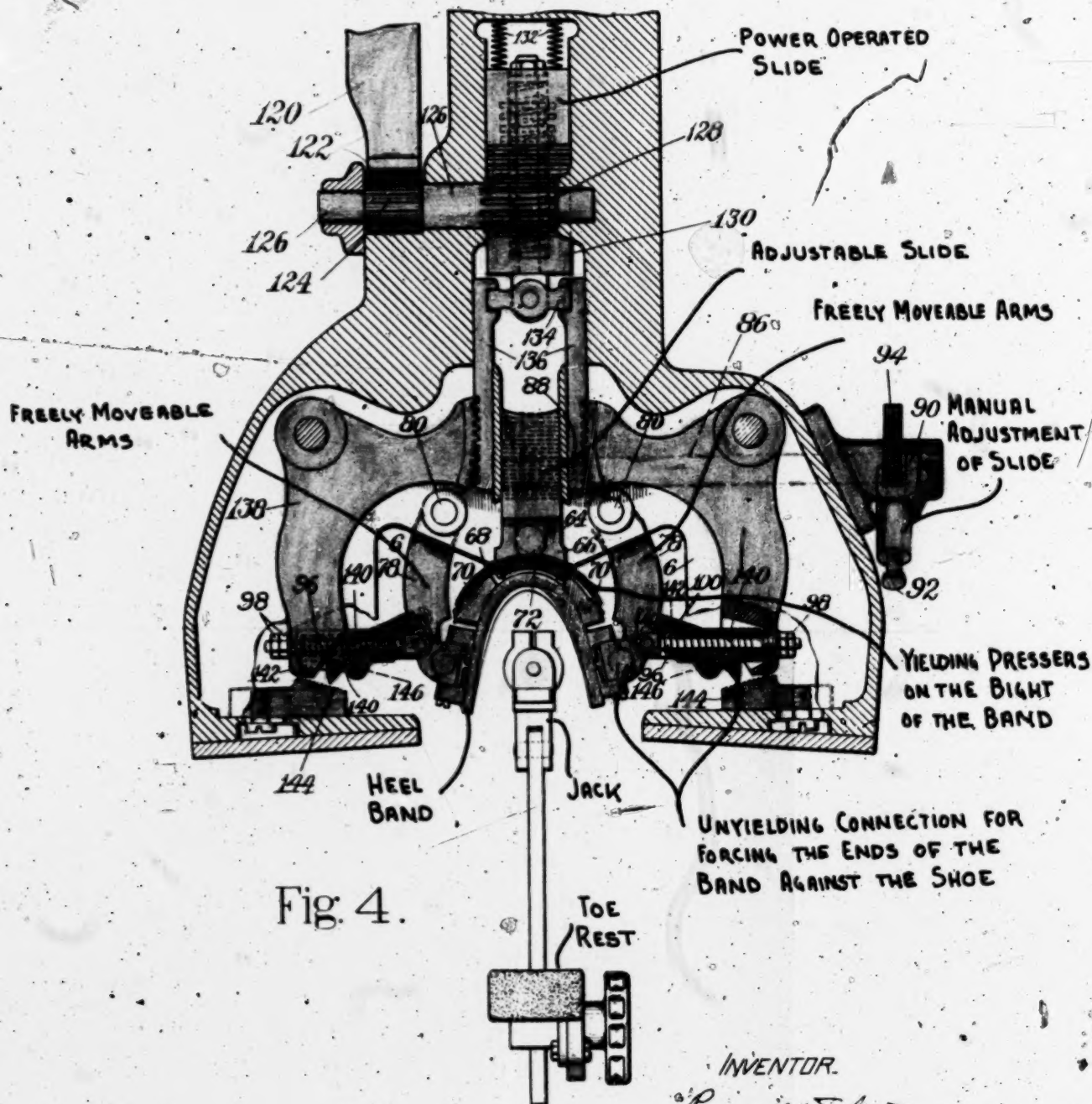


Fig. 4.

UNYIELDING CONNECTION FOR
FORCING THE ENDS OF THE
BAND AGAINST THE SHOE

INVENTOR.

Ronald F. McFeely
By his Attorney
Nelson M. Howard



6) ~31

Oct. 27, 1925.

1,558,737

R. F. McFEELY

LASTING MACHINE

Original Filed Aug. 16, 1915

6 Sheets-Sheet 4 (4)

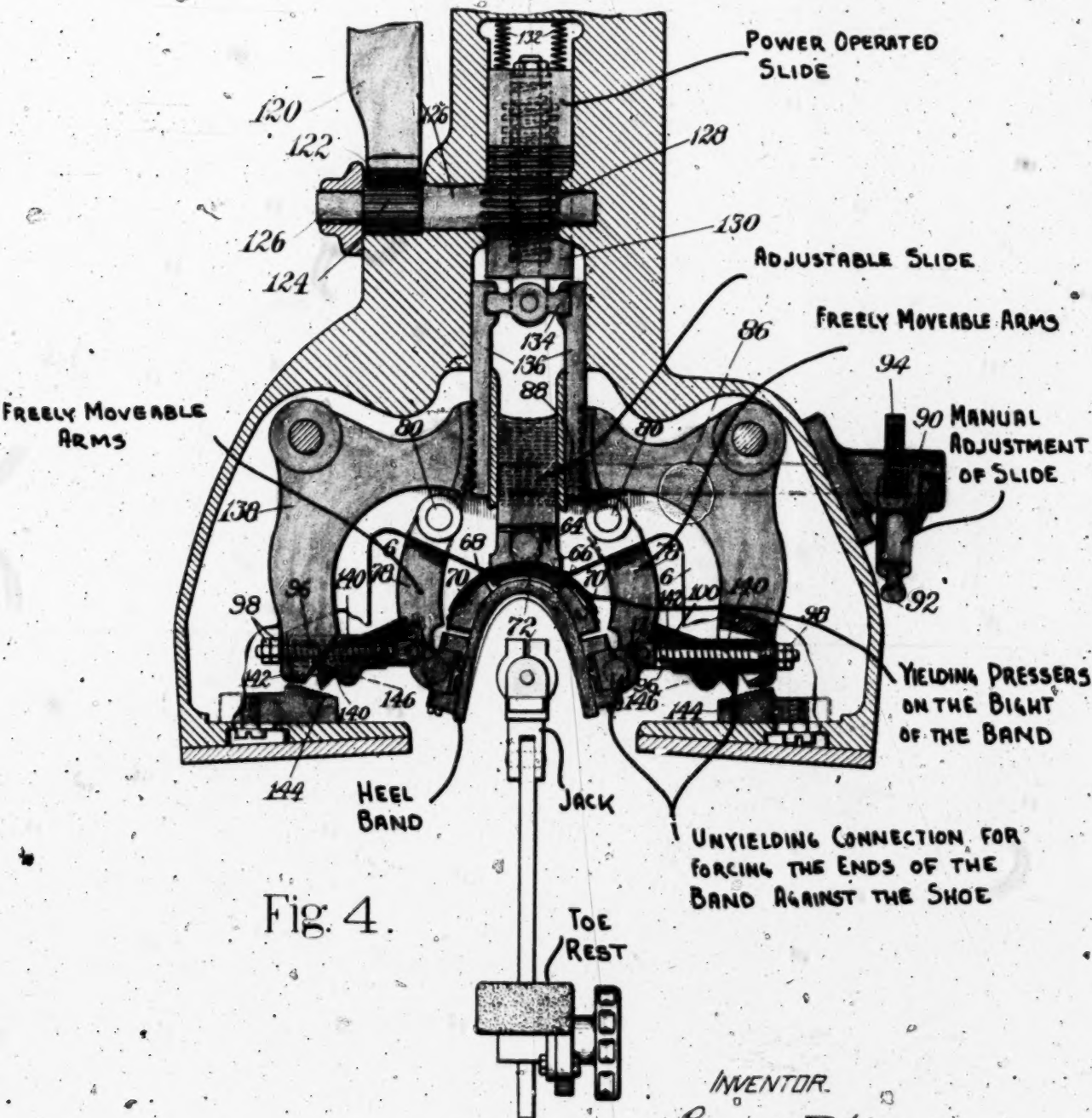
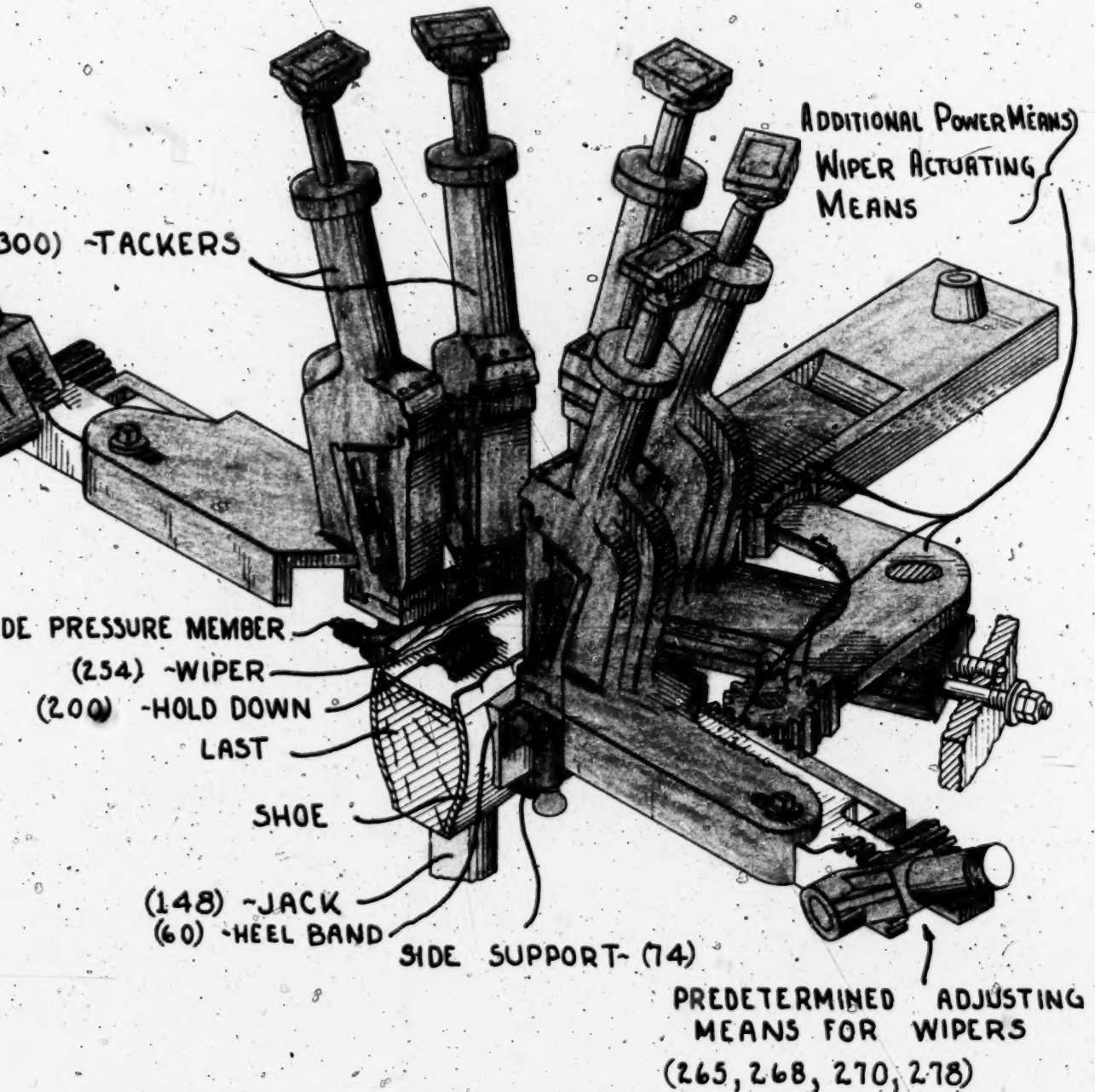


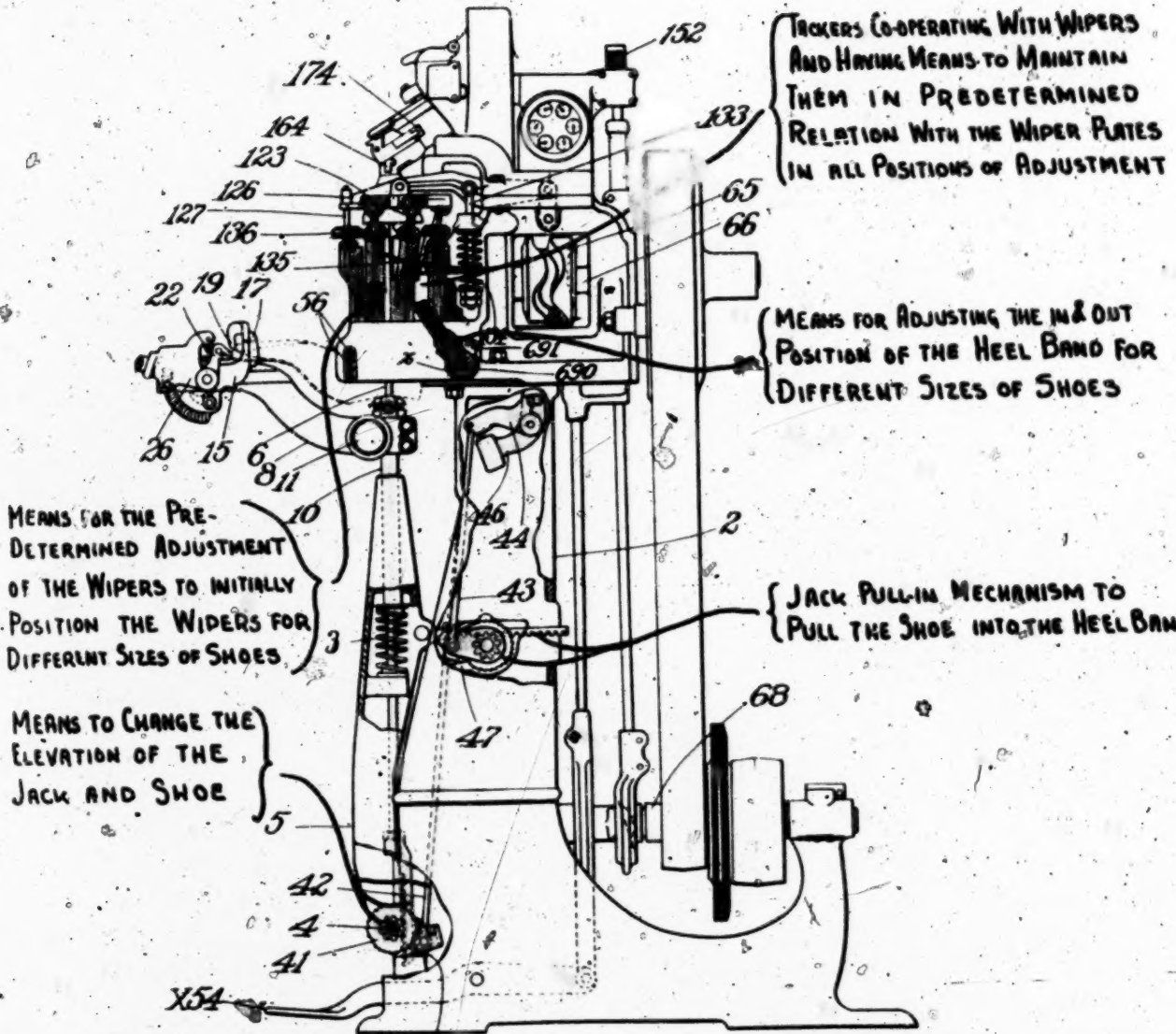
Fig. 4.

INVENTOR.

Ronald F. McFeely
by his attorney
Calvin W. Howard

R. F. McFELY
1,558,737





WITNESSES: 47

Elizabeth C. Coyle
 Edith C. Hollbrook

Fig. 1.

INVENTOR:

Ronald P. McFarley
 By his Attorney
 Nelson W. Howard

TACKERS CO-OPERATING WITH WIPERS & HAVING MEANS
TO MAINTAIN THEM IN PREDETERMINED
RELATION WITH THE WIPER PLATES
IN ALL POSITIONS OF ADJUSTMENT

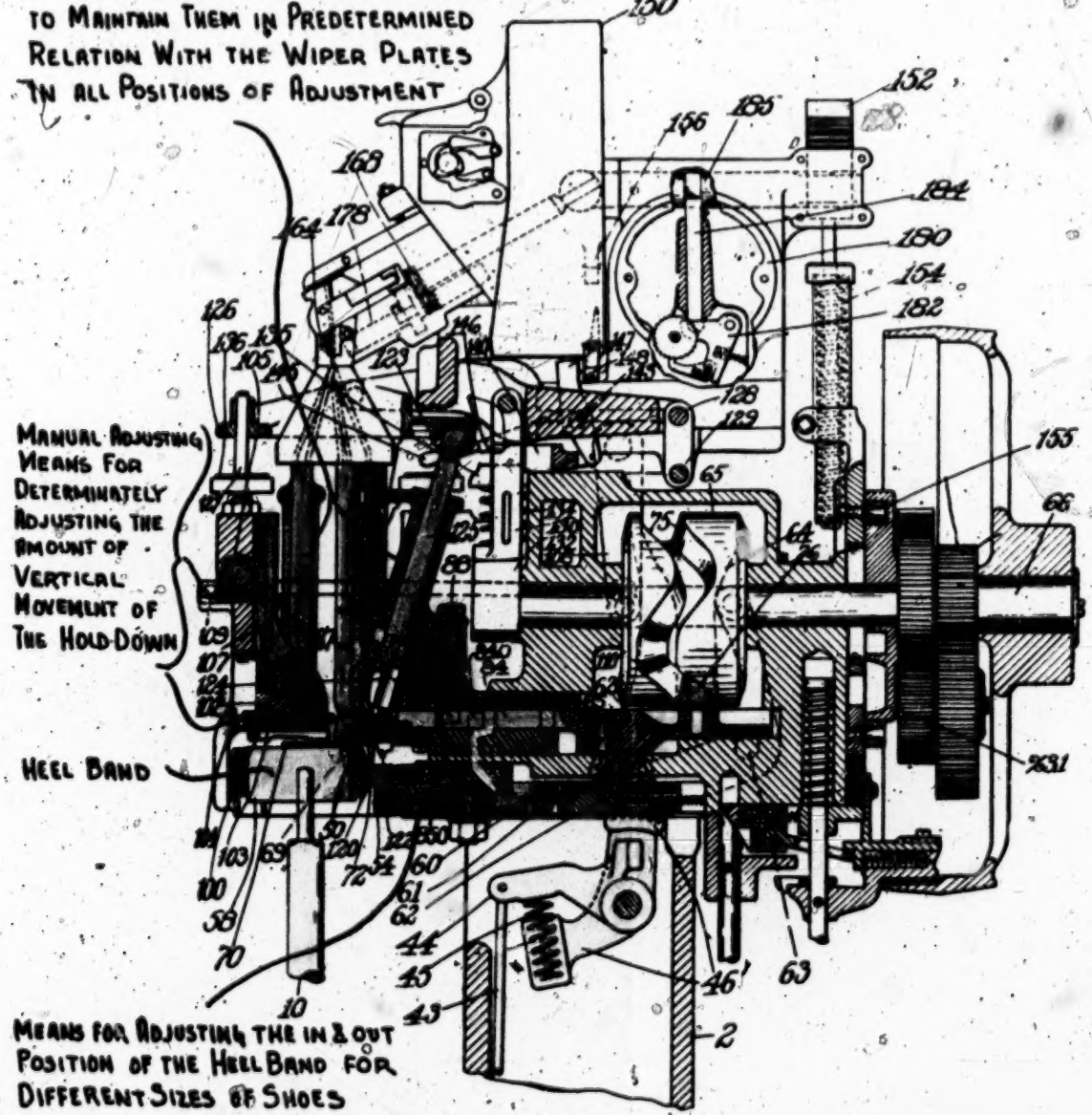


Fig. 2.

WITNESSES.
Elizabeth C. Cople
Luth & Hallbrook

INVENTOR.
Ronald F. Hartley
By his Attorney,
Helen M. Howard

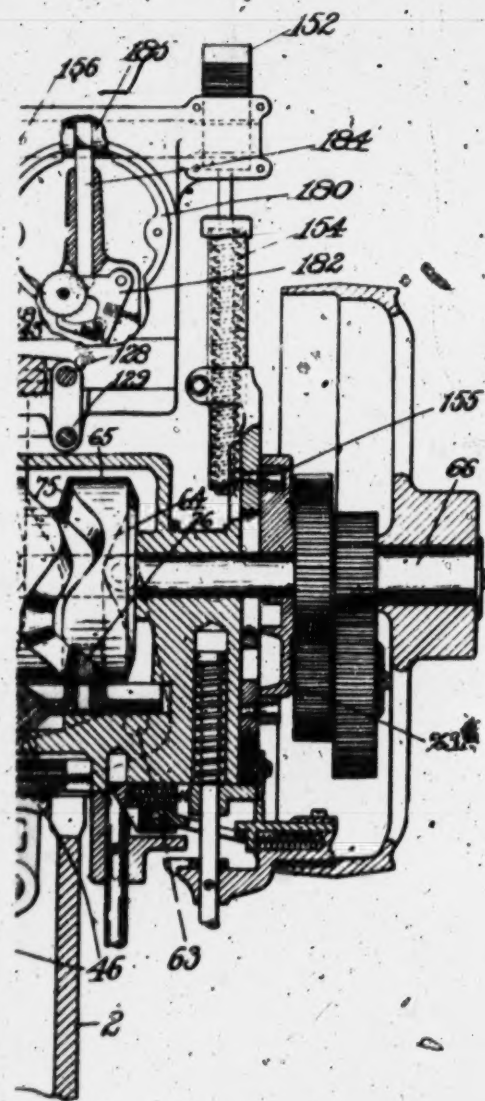
10-5111



END
TACKING
UNIT

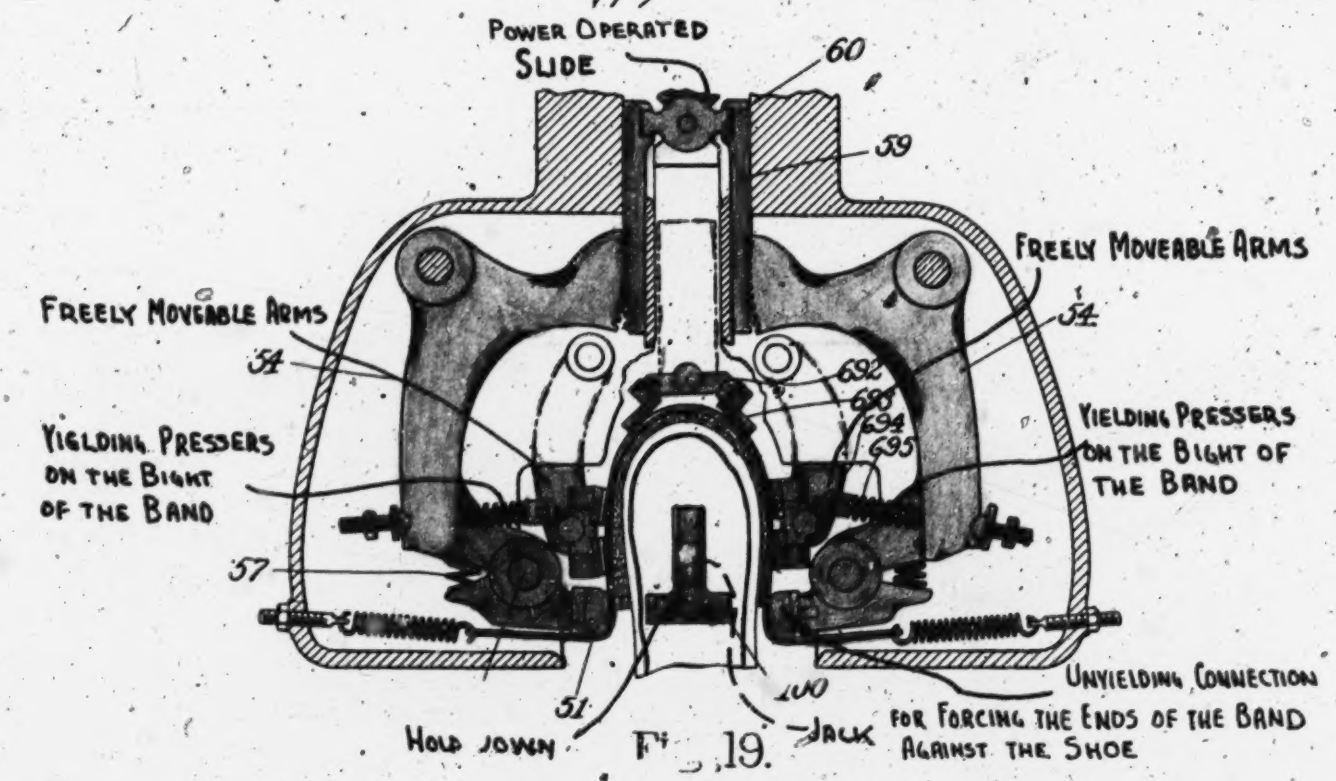
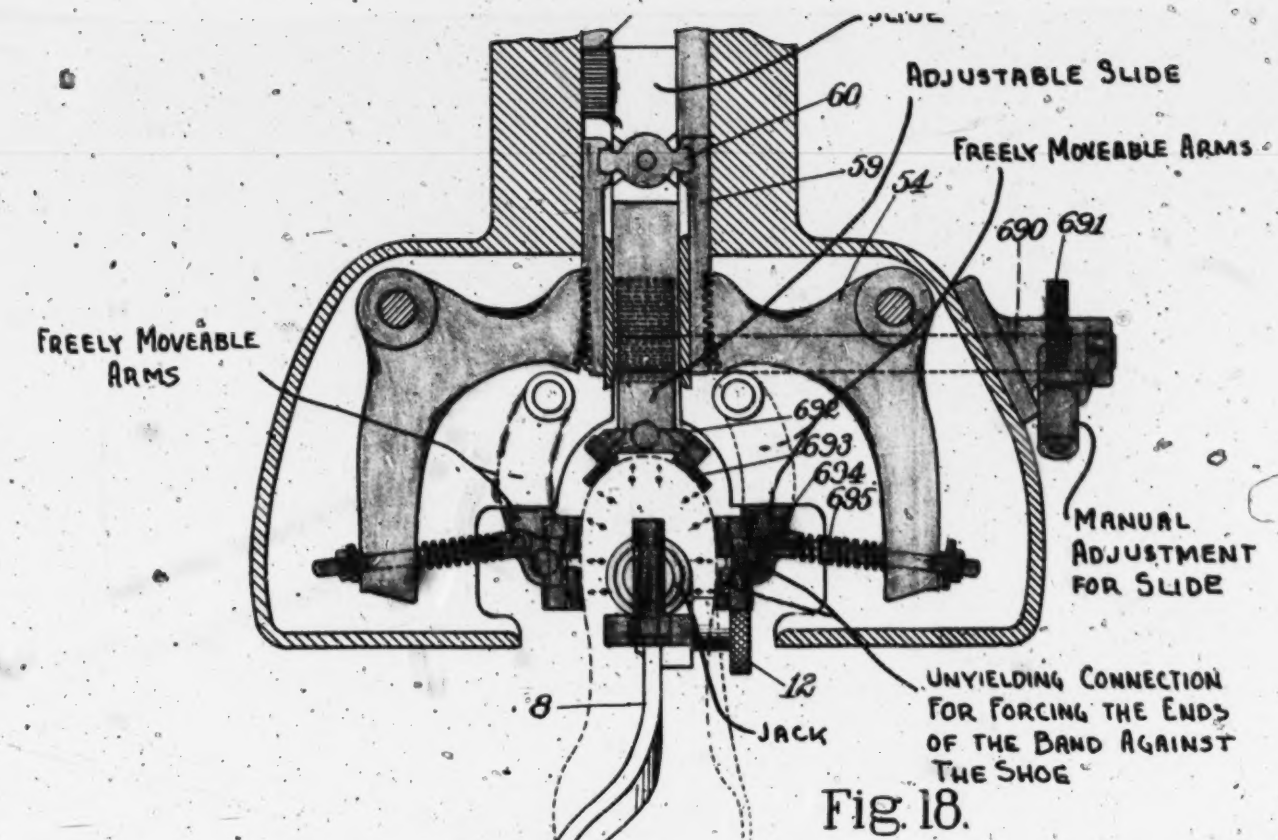
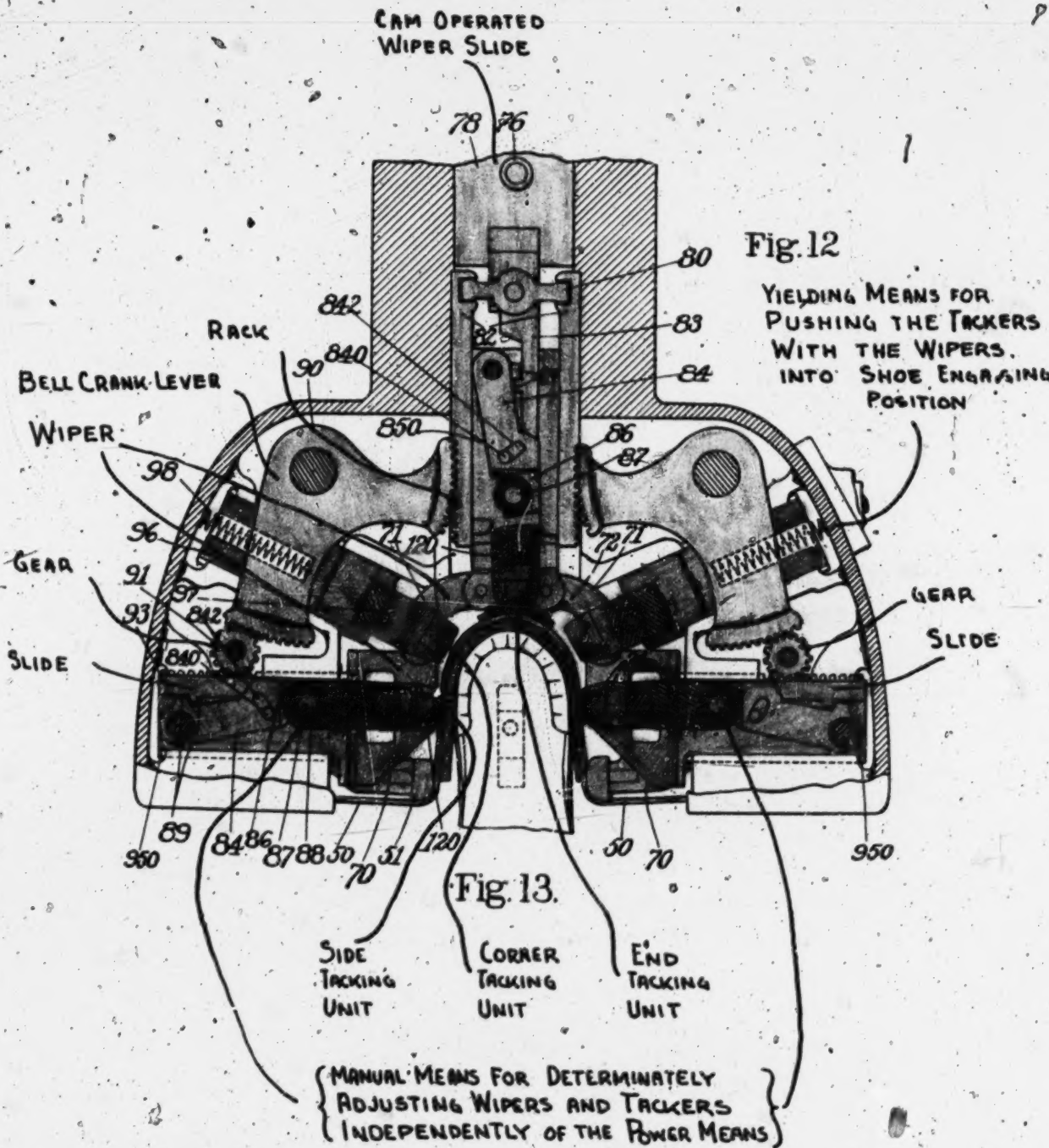
{ MANUAL MEANS FOR DETERMINATELY
ADJUSTING WIPERS AND TACKERS
{ INDEPENDENTLY OF THE POWER MECH

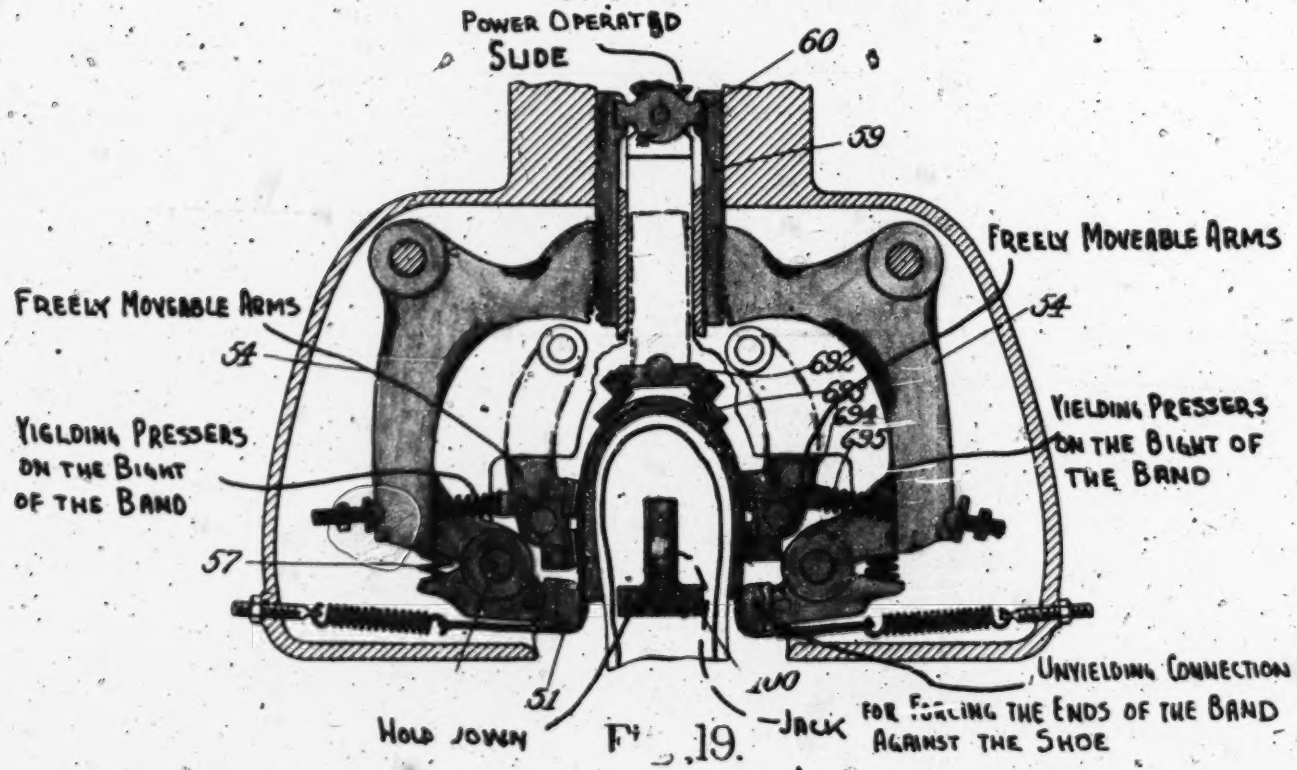
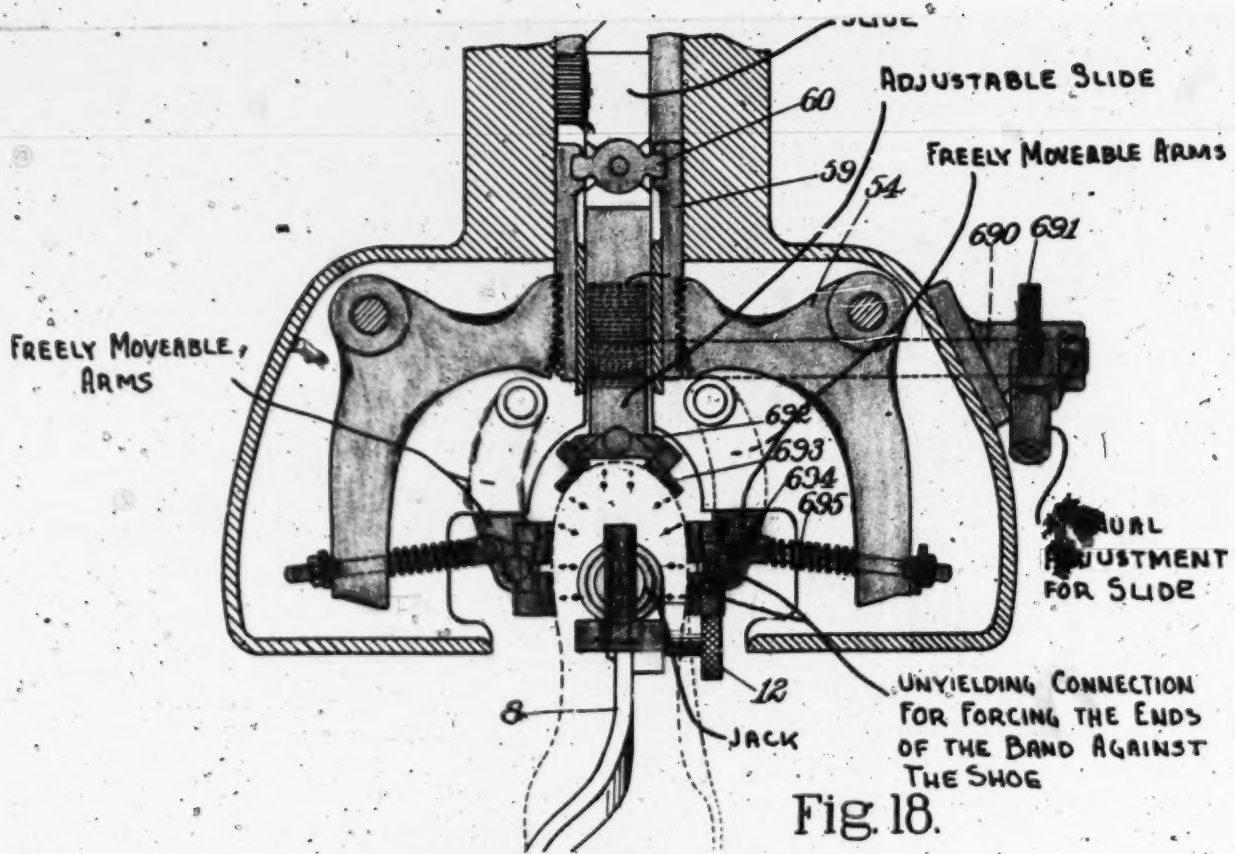
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2.

INVENTOR
Ronald F. Hotzky
By his Attorney
H. L. M. M. M.





ADDITIONAL POWER MEANS }
WIPER ACTUATING MEANS }

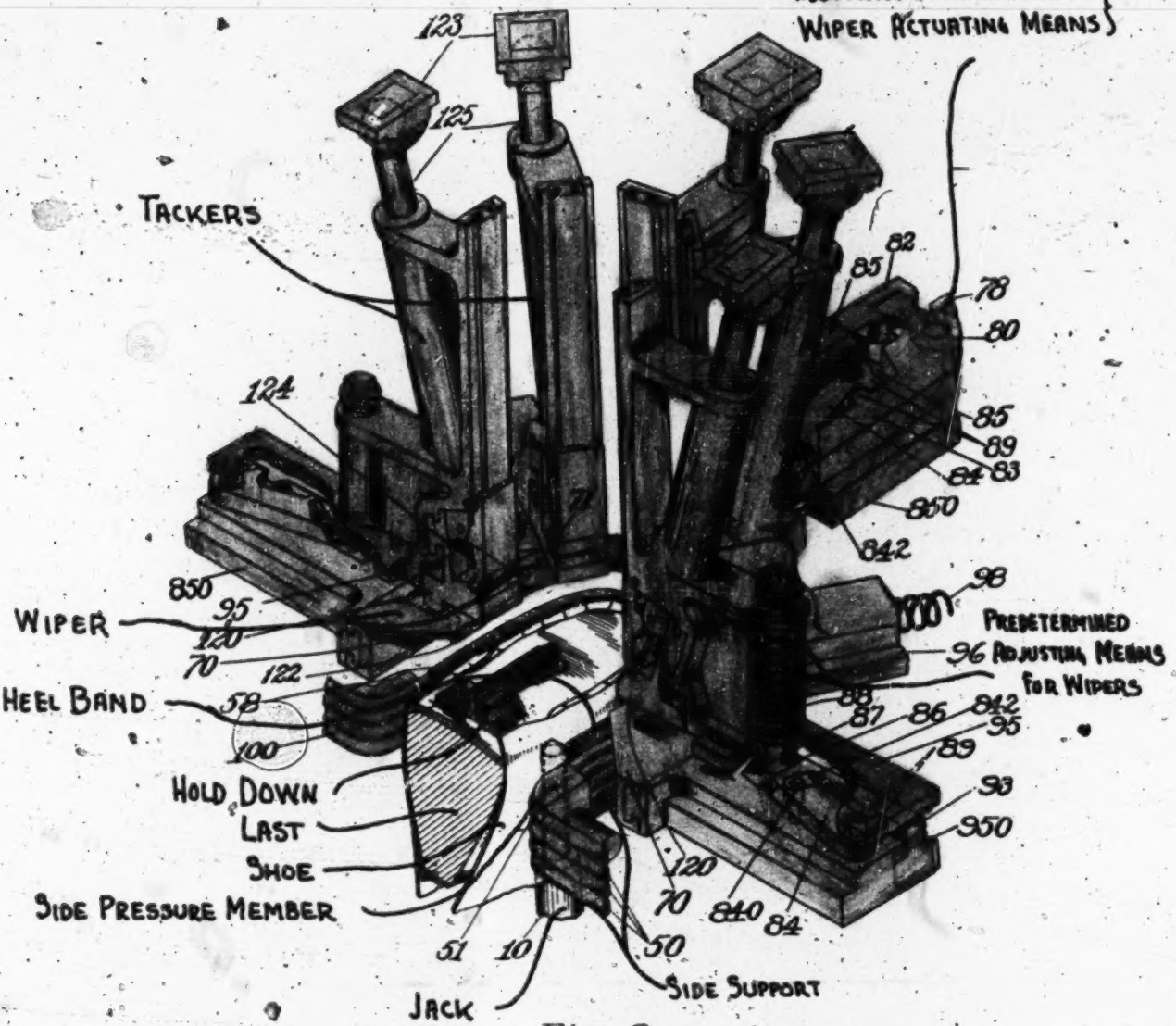


Fig. 8.

WITNESSES:

Elizabeth C. Cook
Eliot C. Hallbrook

INVENTOR:

Ronald R. Heston
By his Attorney
Nelson W. Leonard

APPENDIX B.

CLAIMS IN SUIT FROM SECOND McFEELY
PATENT NO. 1,538,737.

6. A machine of the class described having in combination, end lasting wiper plates for closing over a last bottom, **manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last**, means to effect bodily and swinging, movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened on the bottom of the last, and tacking units co-operating with the wiper plates and having means to maintain them in predetermined relation to the wiper plates in all positions of adjustment of said plates.

23. A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, **a movable adjusting member connected to the lower edge of said clamping member at its rear closed end**, means to support the lower edges of said clamping member at opposite sides, pressure members arranged to engage the opposite sides of the U-shaped clamping member at points above its lower edges and to press said sides inwardly to force the end of the upper in close conformity to the last, **manually operable means to move said adjusting member to slide the U-shaped clamping member relatively to said pressure members**, means to operate said pressure members to clamp the shoe upper, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last.

42. A machine of the class described having, in combination, clamping means to embrace one end of a last and shoe, end wipers positioned to operate on the edges of the upper at said end of the shoe, **a hold-down mounted for vertical movement and positioned to engage the bottom of the last and shoe**, a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down, power operated mechanism effective to move said support

forcibly to press the last and shoe against said clamping means and hold-down and to actuate the clamping means, mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers, mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe, the said hold-down mechanism, being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidently correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers, and the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last and shoe, and manually adjustable means for determinately varying the amount of vertical movement of the hold-down.

85. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, **means for effecting a preliminary adjustment of the wipers to the contour of the shoe**, additional power means for subsequently operating the wipers, and tackers connected to the wipers for preliminary adjustment with them and for power effected movement with the wipers subsequently over the shoe.

91. In a machine of the class described, the combination with last and shoe positioning means, of an end embracing band for clamping the upper round the lateral periphery of an end of the last, supporting means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe, **and means connected to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means.**

FEB 11 1942

CHARLES ELMORE GOSLEY
CLERK.

IN THE
Supreme Court of the United States

OCTOBER TERM, 1941.

No. 332.

THE WILLIAMS MANUFACTURING COMPANY,
Defendant-Petitioner,

v.

UNITED SHOE MACHINERY CORPORATION,
Plaintiff-Respondent.

REPLY BRIEF FOR DEFENDANT-PETITIONER.

H. A. TOULMIN, JR.,
ROWAN A. GREER,
JAMES B. O'DONNELL,
Counsel for Petitioner.

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Plaintiff-Respondent.

REPLY BRIEF FOR DEFENDANT-PETITIONER.

Matters Not Discussed.

Throughout respondent's brief reference is made to questions of infringement and allied matters. No such questions were presented by the petition for the writ. We understand that such questions cannot now be discussed here and we have not done so. Our silence does not mean that we agree: it only means that we are endeavoring to conform to the off repeated announcement of this rule by this Court.

Crown Cork & Seal Company v. Ferdinand Gulton,
304 U. S. 159-161.

General Pictures Company v. Electric Company, 304 U. S. 175-177-178.

Connecticut v. Palmer, 305 U. S. 493.

National Licorice v. National Labor Relations Board, 309 U. S. 350.

Rorick v. Devon, 307 U. S. 299-303.

The following comments we hope will be helpful in correcting any misapprehensions from certain of the statements in respondent's brief.

Briefly, respondent's brief proposes that the claims in issue are good because the old elements of the old combination are useful, together with the alleged new adjustments. As elsewhere stated, we believe this is true of nearly all of such invalid claims; that the old mechanism included is bound to be useful. There would be no purpose in including what was not useful, but that is no justification for re-monopoly because utility alone does not confer invention.

Error as to the Dragging Back of Leather.

Respondent's brief at page 12, claims "that the objectionable dragging back of the leather takes place before the tacks are driven," and that the depressing of the shoe in the first McFeely patent does not take place until after the tacks are driven. A reference to the first McFeely patent will show that this is not correct. The wipers are retracted either partially or wholly and either once or a number of times before the tacks are driven. Please witness what the specification of the first McFeely patent says on this subject:

"By the use of these devices the machine can be made to repeat its cycle as many times as may be required with the tacking mechanism each time ineffective and thus a particularly stubborn shoe be lasted in by successive operations of the wipers and finally tacked when it is in satisfactory condition." (R. Vol. II, p. 289)

"The raising of the bottom rest and the lifting of the shoe following it by the expansion of the yielding element in the jack lifting mechanism takes place auto-

matically between the two overworking operations of the wipers." (R. Vol. II, p. 290.)

"If the shoe is a difficult one to last the operator may suspend the driving of the tacks that are in the tack blocks and the delivery of a second set of tacks by shifting the hand lever 145 to set the block 140 and the stop 147. The operator will then watch the wiping over operation and if it is satisfactorily done he will withdraw the block and stop and permit the upper to be fastened by the tacks. If it is unsatisfactory the shoe will be subjected to another cycle of the machine's operation and the block and stop will be withdrawn at the proper time to permit the upper to be secured and a set of tacks fed into place to be driven into the next shoe." (R. Vol. II, p. 290)

It would thus seem that a number of wiping operations take place before the tacking, and "the lifting mechanism takes place automatically between the two overworking operations of the wipers."

Hence, defendant's statement that the change in elevation takes place only after tacking is incorrect.

What Respondent Claims to be the Essence of the McFeely Patent in Suit is Wholly Old.

Respondent says (pp. 13-14) that the two things that characterize the McFeely patent in suit are "he so interconnected the tackers and the wipers that the tackers participate in all movement of the wipers." And he combined with these tackers and wipers moving together, a preliminary adjustment of the position of the wipers.

The first McFeely patent shows (Figure 8) that the tackers 120 are inserted through the wipers 70 and 71, and move with the wipers as a unit so "that the tackers participate in all movements of the wipers." See page 6, lines 50-130, page 7 lines 1-25, which describe this movement of wipers and tackers as a unit in the first McFeely patent.

As to the second alleged new feature of combining a preliminary adjustment of the wipers with the combination of tackers and wipers, this likewise is shown in the first Mc-

Feely patent in the same Figure 8, with the adjusting spring 88, sleeve 87 and cam 86. The object of the adjustment in both McFeely patents is to insure that the wipers will only go to a predetermined position and no further. The first McFeely patent describes this operation on page 4, lines 117-130; page 5, lines 1 to 55. It summarizes the operation by saying:

“Normally, however, the wiper will overcome any resistance offered by the work and complete its stroke into predetermined position over the last bottom to wipe the upper into position to be tacked.”

In view of the foregoing quotation and the rest of the description and drawings in the first McFeely patent, we submit that these two features said to be of essence of the second McFeely, are found within the drawings and description of the first McFeely patent. Incidentally, Copeland shows and describes tackers mounted on the wipers and driving the tacks through the wipers precisely like the second McFeely patent, and the movement of the independent bars c-1 with rollers d-3, will preliminarily adjust the wipers with their tackers mounted on them. (See page 2, lines 102-109.)

Respondent's statement at the bottom of page 16 and top of page 17 of its brief that c-1 is merely the frame of the machine is incorrect. There are two of such members independently adjustable of one another and their position determines the point from which the actuation of the wipers and tackers as a unit, will start.

Respondent's contention (page 21) that “a vital part of the mechanism involved in the new combination is an interconnection between the tackers and wipers such that the tackers move with the wipers during the power stroke of the wipers as well as during any preliminary adjustment of the wipers” is completely met by the interconnection of the tackers and wipers moving together during the power stroke in the first McFeely patent. The only difference (optional in this art) is that the first McFeely had its tack-

ers connected to the wipers so that the tacks would be driven along the margin of the wipers and in the second McFeely the tacks were driven through the wipers as taught by the old Copeland patent. In either event "the tackers, at the end of the power stroke of the wipers, are in the proper position with reference to the margin of the wipers to drive their tacks, regardless of the size of the shoe being lasted."

A reading of the first McFeely patent or the Copeland patent will show this to be true because obviously there must be some means to position the tackers so that they will clear the wipers or tack through the wipers and some means of putting the tacks in the edge of the turned over leather according to the size of the shoe. This is so fundamental in all machines of this class from the very beginning that it is elementary.

The Nature of the Claims.

Respondent takes the position that its claims are good because all the elements in the claims are necessary to the complete functioning of the apparatus. But this is not the answer to respondent's problem. For instance, a patent on a carburetor should not include the engine or the automobile in which the engine is mounted, just because the engine and the chassis of the automobile are necessary in getting the result from the carburetor.

It was on this principle that this Court in *Bassick v. Hollingshead*, 298 U. S. 419, invalidated a claim which included a pump, a discharge coupling connected to the pump, a second coupling and various mechanisms for forming a connector to connect the hose to the automobile so that the grease pump could discharge the grease through the conduit. It was quite true that all of these elements of this invalidated claim were necessary to the complete functioning of the apparatus, but that is no excuse for trying to claim all of such elements in combination with the specifically new thing or the alleged improvement. To say that just because all of the elements of a claim are useful in securing an ultimate general result is an excuse for remonop-

olizing the old combination is simply to beg the question of extension of monopoly. That is the very error that the Circuit Court of Appeals fell into in following this same line of argument in this case.

Likewise in *Lincoln v. Stewart-Warner*, 303 U. S. 548, the claim was the combination of a lubricant compressor with a coupling member, a nipple and mechanism actuated through the grease for effecting a clamp of the lubricating apparatus on a portion of an automobile to lubricate it. Here again the same principle was applied that is present in this case. It is no justification for attempting to re-patent an old monopoly to say merely that the elements of the old monopoly are useful in connection with the detailed improvement included in the claim. Of course they are: it would be strange if they were not useful.

The Sliding Heel Band Feature.

Respondent says that in the McFeely patent in suit that "the essential feature of the heel band adjustment mechanism shown in the McFeely patent in suit is that this mechanism is such that the heel band slides with relation to its supports, etc." That was true of the first McFeely patent. The heel band was movable in the rubber cord supports so that it could slide in one direction under the pressure of the shoe and in the other direction under the pressure of the back stop 69 which is exactly the same as in the second McFeely patent except that it is not permanently attached to the back of the heel band. Of this the first McFeely patent said "a back stop 69 is adjustably mounted into position to limit the backward movement of the shoe into the elastic heel band which is effected by the connection to the jack post through the rod 43. This insures a predetermined positioning of the shoe lengthwise with relation to the operating parts of the machine."

And then the patent goes on to say that this back stop is adjustable by the shaft 690 "for different groups of sizes such as men's, women's, children's." That, of course, is the purpose of a slidable heel band—adjustment to differ-

ent sizes of shoes which causes the heel band to be positioned at different points inwardly and outwardly. Such an adjustment is old as note the illustrations in our main brief from Brock 1,188,616 and Keyes 1,023,854.

It is obvious that this must be so and that the statement of the Court of Appeals was not correct when it said that "the heel band of the first McFeely machine was loose and without support and incapable of sliding movement." The very fact that it was loose proves it capable of sliding movement and that it must be supported by the rubber bands or it would be of no use. There would be no point in adjusting the position of the back pressure rod engaging the back of the heel band marked 69 unless there was an in-and-out movement which is slidable as described in the above quotation from the first McFeely patent.

Adjustments of the Vertical Movement of the Hold-Down.

In our main brief we have quoted from the first McFeely patent and the Pym patent and pointed out in each case the parts of the drawings and the description that show that these patents do have this feature. We are content to leave those statements as to those patents to show that this is a fact. See pages 7, 10, 13, 21, 27, etc. of our main brief.

Questions of Fact.

We can assume for the purpose of argument that all the statements and Findings of Fact were correct. While we do not agree that this is so because "clear error is shown" yet even with this assumption petitioner is still on sound ground because it makes no difference if all these facts be true for the good reason that respondent is still in the position of having endeavored to cover a number of admittedly old elements in an old combination by merely including an adjustment which it says is new. It mistook its remedy. It should have claimed such an adjustment per se. So the whole argument as to Findings of Fact can be conveniently disposed of because it does not in the end change the basic

question and the essential ruling heretofore made by this Court that you must not claim more than your invention or you will have committed a fatal error in the drafting of the claims. It is just as much to the public interest to leave the old combination free to the public as it is to the public interest to encourage invention by giving protection to the specifically new thing contributed by the inventor. When such a contribution is made it is no excuse to remonopolize what has already gone to the public domain.

Petitioner Desires No Retrial of the Facts.

The facts are plain and settled: petitioner does seek a proper application of the law *on extension of monopoly*, based upon the facts as found by the Courts below. Petitioner's issue with the Courts below is one solely of law as to the application of the decisions of this Court in *Bassick v. Hollingshead*, 298 U. S. 415; and *Lincoln v. Stewart-Warner*, 303 U. S. 545 and other decisions of this Court.

This is a question, therefore, of a construction of patents, which is a matter of law. *Powder Co. v. Powder Works*, 98 U. S. 126, 134; *Singer v. Cramer*, 192 U. S. 265; *Sanitary Refrigerator v. Winters*, 280 U. S. 30; *Hurin v. Electric Vacuum Cleaner*, 298 F. 76 (C. C. A. 6); *Budd v. Wilson*, 21 F. 2d 803 (C. C. A. 6); *Motor Wheel v. Rubsam*, 92 F. 2d 129, 131 (C. C. A. 6), certiorari denied 304 U. S. 560; *Baldwin Rubber v. Paine & Williams*, 99 F. 2d 1, 3 (C. C. A. 6).

Likewise, what is or is not aggregation, is a construction of a patent and is a matter of law. See cases cited above and *Grinnell v. Johnson*, 247 U. S. 426.

Therefore, in view of the foregoing, it will be seen that respondent is in error in stating that the issue is one of fact: the fundamental issues are those of law.

Respectfully submitted,

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DEPT. OF JUSTICE

In the
Supreme Court of the United States.

OCTOBER TERM, 1941.

No. 332.

THE WILLIAMS MANUFACTURING COMPANY,
Petitioner,

v.

UNITED SHOE MACHINERY CORPORATION,
Respondent.

BRIEF FOR RESPONDENT IN OPPOSITION TO
PETITION FOR CERTIORARI.

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In the
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'THE WILLIAMS MANUFACTURING COMPANY,
PETITIONER,

v.

UNITED SHOE MACHINERY CORPORATION,
RESPONDENT.

**BRIEF FOR RESPONDENT IN OPPOSITION TO
PETITION FOR CERTIORARI.**

STATEMENT OF THE CASE.

This is an ordinary patent suit brought by respondent against petitioner in the District Court for the Southern District of Ohio, for infringement of McFeely patent No. 1,558,737 and Hoyt patent No. 1,508,394. The District Court found both patents valid and infringed (Rec. Vol. I, p. 477). The Circuit Court of Appeals for the Sixth Circuit affirmed the holding of validity and infringement as to the McFeely patent but held the Hoyt patent invalid, Judge Hamilton dissenting without opinion (Rec. Vol. I, p. 502).

The charge of infringement was based upon petitioner's

Emphasis in this brief ours.

use of four so-called "Calzera" automatic heel seat lasting machines imported by petitioner from Germany, where they were made by Moenus Maschinenfabrik A/G of Frankfort. The Circuit Court of Appeals found that these German machines "are copies of the commercial construction of the plaintiff [respondent]" (Opinion, Rec. Vol. I, p. 505).

In its petition for certiorari and brief, petitioner asserts (p. 1) that "the issue here is the extent of the right to re-patent an expired monopoly". There is no such issue. An "expired monopoly" obviously cannot be "repatented". Both courts below specifically held that there was no such "repatenting". Petitioner is merely seeking to obtain from this court a third consideration of issues of fact which have been thoroughly considered and decided adversely to it by both of the courts below.

There is here no conflict of decision between Circuit Courts of Appeals, no new or doubtful question of law, no conflict between the decision of the Circuit Court of Appeals and applicable decisions of this or any other court, and no question of public importance.

All of the questions presented by the petition will be found, upon analysis, to be purely and simply *questions of fact*.

ALLEGED "EXTENSION OF EXPIRED MONOPOLY".

This is the "issue" to which the petition and brief are very largely devoted. Petitioner asserts that the decision of the Circuit Court of Appeals herein conflicts with the decisions of this Court in *Bassick v. Hollingshead*, 298 U.S. 415 and *Lincoln v. Stewart-Warner*, 303 U.S. 545, cited as prohibiting the extension of a monopoly of an expired patent by the substitution of mechanical details old in the art (Petition, p. 5; Br. p. 10).

The Circuit Court of Appeals was entirely familiar with the principle of these cases. The Court itself cited and discussed them, and in fact *held the Hoyt patent in suit invalid under the principle therein stated* (Opinion, Rec. Vol. I, p. 513); but it found *upon the facts* that the McFeely invention was not within that principle.

Petitioner's assertion is that the McFeely patent in suit was essentially a repatenting of an earlier McFeely patent No. 1,129,881, now expired. This, of course, is purely a question of fact and it is a question which was fully considered by the courts below and decided adversely to petitioner. The District Court said (Rec. Vol. I, p. 483):

"While the McFeely patent in suit/ No. 1,558,737, embraces many elements of the McFeely patent No. 1,129,881, the earlier McFeely patent lacked, so far as it relates to Claims 6 and 85, certain elements which prevented it from being commercially successful; that is to say, among others, it would not permit of a successful operation upon a range of shoe sizes; the operation of the tackers and wipers could not be controlled with accuracy, or in other words, adjusted as are the tackers and wipers in the machine covered by the patent in suit; and also, immediately before the tacking movement the wipers would be retracted partly to permit of the tacking and in so doing have a tendency

to pull the upper from the insole, which would tend in some instances to and in many operations did make an imperfect job, if not damage the shoe. This was overcome in the machine covered by the patent in suit by the wipers moving in toward the shoe, holding the upper in place rather than pulling the upper away from the last, prior to the tacking as in the earlier McFeely patent."

The Circuit Court of Appeals said (Rec. Vol. I, p. 504):

"Principally, however, is reliance placed by the appellant upon an earlier patent to McFeely, No. 1,129,881. This is claimed to be a complete anticipation in all essential elements, in manner of their functioning, and in results. It is now expired and the appellant states the fundamental issue here to be whether the appellee may now extend its monopoly by substituting in an old construction equivalent mechanical details also old in the art and so to get a new patent for another 17 years."

(pp. 511-512):

"But to reduce the second McFeely patent to a mere aggregation of tacker and the old form of bed laster or to consider it as merely the combination of the first McFeely patent and conventional expedients for adjustment, is to ignore matters of substance.

"The patent in suit, unlike its predecessor, provides not only for a preliminary adjustment of the wipers but for the maintenance of the tackers in relation thereto. The tacking occurs before the final withdrawal of the wipers, eliminating the tendency to pull the material to be tacked from its wiped position. The heel band of the first McFeely machine was loose and

without support and incapable of sliding movement. Upon the withdrawal of the shoe the heel band was ejected as the result of the release of spring tension upon a plurality of cords. There was absent in the prior McFeely machine, means for adjusting the vertical movement of the hold-down that are present in the patent in suit. *Taken together, the improvements in the second McFeely machine gave a new result and a new unitary mode of operation of the entire machine.* There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element, as in *Bassick v. Hollingshead*, 298 U.S. 415; or *Kodel Elec. Co. v. Warren Clock Co.*, 62 Fed. (2d) 692 (C.C.A. 6).

“The patent in suit is not merely the aggregate of laster and tacker, and the disclosed improvements upon prior art are not limited to the addition of adjustability.”

In an attempt to develop its argument, petitioner misstates at page 2 of its petition the subject matter of the patents in suit. The McFeely patent in suit does not, as petitioner asserts, cover a “bed laster in combination with automatic tackers”. The Circuit Court of Appeals specifically said (Opinion, Rec. Vol. I, p. 511): “The (McFeely) patent in suit is **not** merely the aggregate of laster and tacker.” Nor is the Hoyt patent in suit “for another improved form of combined bed laster and automatic tackers”, as petitioner asserts (p. 2). On the contrary, the Hoyt patent is for a machine for attaching an outsole to a shoe; it is not a lasting machine at all (Hoyt patent, Rec. Vol. II, p. 49-60). The Pym patent covered merely an improvement in machines of the “bed laster” type (Opinion, Rec. Vol. I, p. 504).

The chart on page 2 of the petition for certiorari appears

to imply that merely because several patents have overlapping terms, they also have overlapping subject matter and claims. The error in this implication is too obvious to require comment. Whether there is any overlapping in the subject matter and in the claims of these patents is purely a question of fact which both of the courts below have decided adversely to petitioner.

The improvement effected by the McFeely patent in suit was not, as petitioner repeatedly asserts (Br. pp. 11, 13 and elsewhere), mere adjustability. The contrary was specifically found by the Circuit Court of Appeals (Opinion, Rec. Vol. I, pp. 511-512; *supra*, p. 5):

“... the disclosed improvements upon the prior art are not limited to the addition of adjustability.”

Thus it is evident that any difference of opinion with regard to petitioner's “primary issue” is purely and simply a question of fact.

• ALLEGED “AGGREGATION”.

Petitioner's second alleged reason for granting certiorari in this case is the assertion (Petition, p. 6; Br. p. 19) that the claims in suit are merely for aggregations of old elements or combinations. This is stated by petitioner (Br. p. 19) to be “another form” of petitioner's point I, discussed above.

The Circuit Court of Appeals fully considered this question of fact and said (Rec. Vol. I, pp. 510-511):

“The challenge to the validity of the patent in suit on the ground that it discloses but an aggregation within the principles applied in such cases as *Grinnell v. Johnson Co.*, 247 U.S. 426 (the washing machine and wringer), or *Detroit Stoker Co. v. Brownell*, 89 Fed. (2d) 422 (C.C.A. 6) (the stoker and blower), is not

persuasive. It is true that many of the features of the claims are old and that an organization, including wipers and tackers, was shown in somewhat primitive form in Copeland. It is also true that adjustability of elements, though not in the form shown in the first McFeely patent, is added by the patent in suit to the McFeely type laster, and that mere adjustability by common mechanical expedients may not, of itself, denote the presence of the quality of invention and merit the issue of a patent. *But to reduce the second McFeely patent to a mere aggregation of tacker and the old form of bed laster, or to consider it as merely the combination of the first McFeely patent and conventional expedients for adjustment, is to ignore matters of substance.*

“Taken together, the improvements in the second McFeely machine gave a new result and a new unitary mode of operation of the entire machine.”

Here again, the only questions which petitioner seeks to raise are questions of fact which have been considered by the courts below and decided adversely to petitioner.

“COMMERCIAL SUCCESS OF PRIOR ART.”

Under the above heading petitioner asserts (Petition, p. 6; Br. p. 22) that the Court of Appeals based its holding of validity of the McFeely patent in suit on the fact that this structure was more successful commercially than the earlier McFeely patent.

This is a misrepresentation of the basis of the decision. While the Court below discussed the relative merits of the two structures (Rec. Vol. I, pp. 509-510), it did not base its decision on this comparison, but on the structural differences between the two machines (Rec. Vol. I, pp. 511-512).

"DIVERSITY OF OPINION BELOW."

Under this heading (Petition, p. 6; Br. p. 24) petitioner suggests that the fact that one of the judges of the Circuit Court of Appeals dissented, without opinion, creates a "diversity of opinion". It is a novel idea that a dissent in the court below, particularly a dissent unsupported by any opinion, is ground for the granting of a writ of certiorari.

ALLEGED "PUBLIC IMPORTANCE".

Finally, petitioner asserts (Petition, p. 7; Br. p. 25) that the fact that 1200 of the machines of the McFeely patent in suit are in use, upon which the users are paying rental, makes the case "one of great public importance".

In so far as these machines are held by users under lease, the rentals paid by the lessees are merely ordinary rentals paid for the use of leased property, which will be due, and will continue to be paid, regardless of the existence or validity of any patents on the machines. In so far as the machines have been sold, obviously it makes no difference to their owners whether or not the McFeely patent is valid.

The decision in this case is not of interest to anyone in the country except the parties, because petitioner is the only user in this country of the German machines here found to infringe respondent's patent, and no further machines are now available, or are likely to be available before the patent expires in 1942. In fact, the patent in suit will expire by or about the time a decision could be reached in this case if certiorari were granted.

The petition for certiorari fails to show any reason why this Court should review the decision below. The case presents no conflict of decision, no question of law, and no matter of public importance. What petitioner really seeks by this petition is a third consideration of issues of fact.

which have already been twice decided adversely to it. As this Court said in *Magnum Co. v. Coty*, 262 U.S. 159, 163, "The jurisdiction to bring up cases by certiorari . . . was not conferred upon this Court merely to give the defeated party in the Circuit Court of Appeals another hearing."

Respectfully submitted,

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10 1942

In the
Supreme Court of the United States.

OCTOBER TERM, 1941.

No. 332.

THE WILLIAMS MANUFACTURING COMPANY,
Defendant-Petitioner,

v.

UNITED SHOE MACHINERY CORPORATION,
Plaintiff-Respondent.

BRIEF FOR PLAINTIFF-RESPONDENT.

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DEFENDANT-PETITIONER,
v.
UNITED SHOE MACHINERY CORPORATION,
PLAINTIFF-RESPONDENT.

BRIEF FOR PLAINTIFF-RESPONDENT.

The decision of the Circuit Court of Appeals for the Sixth Circuit herein is reported at 121 Fed. (2d) 273. The decision of the District Court is reported at 29 Fed. Supp. 1015. The case is before this court pursuant to a writ of certiorari granted under authority conferred by Section 240(a) of the Judicial Code, as amended by the Act of February 13, 1925.

The patent in suit, McFeely No. 1,558,737, issued October 27, 1925 (II, 2), is for an automatic heel seat laster useful in the manufacture of shoes. The machine of the patent, as manufactured by the plaintiff, has been used extensively, not only in this country, but also in the principal countries of Europe and South America (D.C. Opinion, I, 483; also I, 124, 145).

Emphasis in this brief ours unless otherwise indicated.

The District Court for the Southern District of Ohio, Western Division (Druffel, J.) (I, 477-486;) and the Circuit Court of Appeals for the Sixth Circuit, on appeal (I, 501-513), held the patent valid as to the claims in suit (claims 6, 23, 42, 85 and 91), and infringed by defendant's use of four so-called "Calzera" automatic heel seat lasters manufactured by Moenus Maschinenfabrik A/G of Frankfort A/M Germany and imported by defendant in 1933-4 (Finding 2, I, 478).

The manufacturer of these lasters was familiar with the patent in suit, had seen plaintiff's commercial machine made under it, and in the infringing construction copied the plaintiff's commercial machine made under the patent even in minor details not shown in the patent.

As the Court of Appeals said (Opinion, I, 505):

"It seems reasonably clear, from the general appearance of the accused machines, and as they are depicted and described in the Moenus catalog, and from the evidence of the defendant's witness Kath, a mechanical engineer engaged on patent work for the Moenus Company, who came from Germany to help in the preparation of the trial and whose duty it was to study shoe machinery patents including those granted by United States, and who saw one of the McFeely machines in Germany and was familiar with the patent drawings and specifications, that the Moenus machines are copies of the commercial construction of the plaintiff. They followed this construction even in minor detail not shown in the patent, and the important results claimed for it by the inventor over machines of the prior art are enthusiastically proclaimed in the Moenus catalog."*

*For the evidence on this matter see I, 392, 400, 401.

Pertinent portions of the booklet issued by the Moenus Company describing this "Calzera" heel seat laster, are reproduced in the record at II, 496-500 incl.*

THE ISSUES RAISED BY DEFENDANT.

Defendant's brief (p. 2) says that

"The primary issue is extension of monopoly by re-patenting an old combination to redominate a trade for another seventeen years, contrary to the principles announced by this Court in *Bassick v. Hollingshead*, 298 Fed. 415, and *Lincoln v. Stewart Warner Corp.*, 303 U.S. 545."

The patent of which it is said that the patent in suit is a "repatenting" is McFeely patent No. 1,129,881 (II, 266)

*This document describes the performance of this machine, as compared with prior art methods.

It says (II, 496) that "the result is astonishing".

After enumerating the "astonishing" results, it asks "Are these not long-wanted advantages?" (II, 496).

And on the view of the machine which appears at II, 498, the booklet says:

"But a few years ago a problem—today a reality!"

The features of this machine which this booklet lists as the "astonishing" "long-wanted advantages" are the advantages obtained by the copying of plaintiff's laster, namely, large increase in production as compared with prior art machines, higher quality work and adaptability for use "for any size and kind of shoes, from the smallest children's size up to the largest men's." (II, 496-499).

Because of the

"possibility to force and nail the entire seat in one operation", the machine, the circular says,

"demands respect and surprise. There is no doubt that the 'Calzera' is the joy and pride of every factory." (II, 500).

which issued on March 2, 1915 and, therefore, expired on March 2, 1932.*

Defendant asserts that the McFeely patent in suit shows the same machine which was shown in the first McFeely patent, and that the claims in suit purport to cover this old machine with three "adjustments added", as to which "adjustments" it says (p. 31) that

"All three of these adjustments were found in the first McFeely patent."

It is, of course, plain on the face of the matter that these statements cannot be correct. If the earlier patent showed everything that is shown in the patent in suit, then, of course, the Patent Office (which cited the first McFeely patent during its consideration of the application for the patent in suit, C.C.A. Opinion, I, 508) would not have allowed the claims in suit. Furthermore, the defendant and the manufacturer of the defendant's machines are free, and have been free for ten years, to use any structure disclosed in the expired patent, without liability to any charge of infringement.

We judge that defendant's position is, rather, as amplified in its brief at p. 2 and elsewhere, that the patent in suit shows the same basic mechanism as that of the expired patent, modified only "by the substitution of mechanical details, already old in the art", and that the patent in suit "merely aggregates old adjusting features with an old combination".

These issues have been decided adversely to defendant's

*The fact that the earlier patent issued to the same inventor does not affect the legal situation. If defendant's assertion that the patent in suit purports to cover merely the same subject matter covered by the expired patent were correct, the patent in suit would be invalid whether the earlier patent had issued to McFeely or to anyone else.

contention by both the District Court and the Court of Appeals.

The District Court found that the features of construction defined in all of the claims in suit were new and useful, not found in the first McFeely patent or elsewhere in the art, and that they involved invention over the first McFeely patent and the rest of the prior art (I, 481, 482, Findings 25, 26, 27, 29, 35).

These were the findings of a trial court which listened to testimony for about ten days, and which during the course of the trial witnessed the operation of plaintiff's machine in factory production and also the operation of the prior art "bed" lasting machines on which defendant relies (I, 51).

Affirming the District Court decision regarding this patent, the Court of Appeals said (I, 511):

"But to reduce the second McFeely patent to a mere aggregation of tacker and the old form of bed laster, or to consider it as merely the combination of the first McFeely patent and conventional expedients for adjustment, is to ignore matters of substance. . . . Taken together, the improvements in the second McFeely machine gave a new result and a new unitary mode of operation of the entire machine. There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element, as in *Bassick v. Hollingshead*, 298 U.S. 415, or *Kodel Electric Co. v. Warren Clock Co.*, 62 Fed. (2d) 692 (C.C.A. 6th).

"The patent in suit is not merely the aggregate of laster and tacker, and the disclosed improvements upon prior art are not limited to the addition of adjustability."

HEEL SEAT LASTING.

At that stage of shoe manufacture when a partially completed shoe is ready for the operation of "heel seat lasting", the shoe upper, with its lining and counter, has been placed on a wooden last*, an insole has been tacked to the last, and the upstanding edges of the upper at the *toe* and *shank* of the shoe have already been "lasted" by flattening them down and tacking them to the insole. The lasting of the *heel seat*, which must now be done, involves conforming the upper materials snugly to the contour of the heel end of the last and fastening them there by tacks. The folding and flattening of the projecting marginal portions of the upper, counter and lining (these marginal portions are termed the "*lasting allowance*") is accomplished by horizontally moving plates called "*wipers*", one on each side of the heel, which are moved inwardly over the heel seat and "wipe" or flatten these projecting marginal portions down on the heel portion of the insole, and then tacks are driven through them into the insole so as to fasten the upper materials in lasted position about the heel seat.

The heel seat-lasting operation is a delicate one; there must be an accurate fit when the heel of the shoe is subsequently applied, and there must not be any looseness in the upper material. A single "wiping" operation is ordinarily not sufficient. There must ordinarily be a first wiping operation which "breaks down" the upper materials, and which is performed with the wipers somewhat above the plane of the insole, and then another wiping operation, with the wipers acting closely along the face of the insole, which "irons" the materials flat on the heel seat.

The condition of a shoe in the stage of manufacture when it is ready for heel seat lasting is shown by Plffs.

*A last is a wooden form of the shape of the foot which the shoe is intended to fit.

Ex. 5F. The condition of the shoe after the heel seat lasting operation has been performed is shown by Plffs. Ex. 5G.*

HEEL SEAT LASTING BEFORE McFEELY—THE "BED" MACHINES.

Prior to the time when McFeely entered the field, the prevailing method of heel seat lasting involved the use of so-called "bed" machines to perform the wiping operations, and then tacking by hand. Examples of "bed" machines are shown in the Lombard, Eaton, Brock and Pym patents mentioned in defendant's brief at pp. 25, 26.

Operation of a "bed" machine (Duplessis, I, 38-40) involves repeated manipulations of levers, foot treadles and other appliances by the operator in order to bring the shoe parts into proper relationship to the insole and last; it is a time-consuming operation; and its results are non-uniform, for they depend largely upon the skill and experience of the operator, upon whether he is tired or not, for the operation is "very tiring to the operator", and even upon his weight, since upon this depends the force exerted by the foot treadle (I, 40).

The District Court, which during the trial witnessed the operation of "bed" machines (I, 51), found as follows: ,

"The machine shown in the McFeely patent in suit is the first automatic heel seat laster which ever went into commercial use. Prior to the advent of this machine, heel seat lasting had been done principally on so-called 'hand method' or 'bed' machines which involved repeated manipulations of levers, foot treadles and various other appliances by the operator, and was a time-consuming and laborious operation, with non-uniform results." (I, 478, Finding 8).

*The operation of heel seat lasting is described in the Court of Appeals opinion at I, 502, 503.

And after this time-consuming and laborious operation had been performed in order to prepare the shoe for the tacking operation, the operator had to drive the tacks by hand.

PERFORMANCE OF THE HEEL SEAT LASTER OF THE PATENT IN SUIT.

As contrasted with the prior "hand method" or "bed" machine operation, the District Court found (Opinion, I, 483) that with the automatic heel seat laster of the McFeely patent in suit

"the heel seat lasting of shoes is accomplished four times as fast as by the prior hand method with a consequent reduction in cost; that the workmanship of the heel seat of a shoe lasted by the McFeely machine is far superior in that all are uniform, whereas when done by hand the workmanship varies according to the skill of the operator, which also resulted in a much larger percentage of damaged shoes than is now the case when the heel seat is lasted by the machine."

By this machine the successive wiping strokes required to "break down" the shoe upper and the subsequent operation of driving the tacks, are all done in a fraction of a second.

The Court of Appeals, which, like the District Court, witnessed the operation of the laster of the patent in suit, said, after describing the sequence of operations which take place during the operation of the machine (I, 503):

"While these operations require extended description the entire sequence is completed in the fraction of a second and too swiftly for the eye to follow."

McFEELY'S FIRST MACHINE—McFEELY EXPIRED PATENT

1,129,881.

In the machine shown in his expired patent 1,129,881 (II, 266) McFeely undertook to provide an automatic heel seat laster, and since a lasting machine, in order to be commercially practicable; must be capable of operating upon a wide range of different sizes of shoes, he provided mechanisms which were intended to make the machine adaptable for use on a range of shoe sizes.

He produced a machine which would work successfully upon certain particular sizes of shoes, but which "*proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory*" (I, 476).*

The history of the one machine which was built in accordance with the first McFeely patent is stated by the Court of Appeals as follows (Opinion I, 510):

"The first McFeely patent contributed little to the art. But one machine was ever built in accordance with its disclosures and this was sent by the appellee to the Victor Shoe Company for test in the lasting of heel seats under commercial conditions, subject to an arrangement by which no charge should be made to the Victor Company for the work done on the machine, and that any shoes spoiled in its operation should be paid for by the appellee. Although the machine successfully lasted shoes of specific sizes, *it proved inca-*

*Defendant's brief says (p. 6) that plaintiff's employees filed affidavits in the Patent Office saying that the machine of the first McFeely patent had been successfully and commercially used "on various sizes of shoes". This is incorrect, as defendant's own quotation from the file wrapper (Br., p. 56) shows. What was said was that this machine had been used in the manufacture of "many pairs of shoes"—not "various sizes of shoes".

pable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory, and after it had been tested for a period it was returned to the manufacturer, was dismantled, and no other similar machine was ever built."

THE TACKER-WIPER MECHANISM OF THE EXPIRED McFEELY PATENT.

It was, of course, fundamental to McFeely's purpose—the production of an automatic heel seat laster—that the tacking operation should be done automatically, as well as the “wiping” operations, and it was the presence of automatic tacker mechanisms on the machine which gave rise to the difficulty in making the machine operative over a range of shoe sizes.

It was easy enough to provide adjustments for the wipers which would allow the wipers to be adjusted for different sizes of shoes. These could be moved by a preliminary adjustment, made before the machine was operated, to the proper position according to the size of the shoe. Such wiper adjustment mechanism had been provided in the old bed lasters as exemplified in the Lombard, Eaton and Brock patents cited in defendant's brief at pp. 25, 26.

But the bed lasters did not provide any tackers and gave no guidance as to how to deal with a machine of which automatic tackers were an essential part.

The tacks must be driven through the “lasting allowance” while the wipers are holding the lasting allowance in place, and at the proper distance from the edge of the heel. *There is, therefore, a particular position, with reference to the heel of the shoe, as well as with reference to the wipers, which the tackers must occupy at the time when they are called upon to do their work. If the heel is a small one, this proper position will be different in space from what it is if the heel is a large one.*

In the bed machines, where the tacks are driven by hand, this of course presents no difficulty; but in an automatic laster, where both wiping and tacking are effected through power-driven parts which have movements of fixed extent in each cycle of operations, the problem of adapting the machine for operating upon a range of sizes presented a real difficulty.

* McFeely, in the machine shown in his first patent, *attempted* to deal with this difficulty by providing for movements of the tackers and wipers such that both wipers and tackers would, during the power movement of the machine, *automatically position themselves properly*, whatever the size of the shoe being operated upon.

This he undertook to do by attaching small parts called "feelers" to the tackers, which feelers, by contacting with the shoe as the tackers and wipers moved inwardly during the power stroke of the machine, would stop any further forward movement of the tackers, supposedly leaving them in the proper position to drive their tacks whatever the size of the shoe, and would then, when the inward movement of the tackers had ceased, cause the wipers to retract, in order to allow the tacks to be driven without interference from the wiper plates.

This mechanism is described in the testimony of Willhauck at Qs. 111-127, I, 411-417 and is illustrated by a model of the mechanism of this expired patent in evidence as Plffs. Ex. 35. It is also explained in detail in the Appendix hereto, p. 41.

This mechanism not only involved highly complicated, and, therefore, expensive and delicate parts, but it also had serious practical defects, as pointed out in the testimony of Willhauck (I, 418, 420).

Retraction of the wipers just before the tacks are driven tended to give a poorly lasted heel, because it tended to pull

the upper materials, which had just been wiped in over the insole, back off the insole again and away from the last (I, 418). In withdrawing, the wipers *tended to undo the work which they did when advancing.**

And, because the extent of the retractive movement of the wipers was indeterminate, depending upon the stage in the power stroke at which the "feelers" contacted the shoe, the wipers might, with some shoe sizes, be withdrawn completely from the heel seat before the tacks were driven, while, in other cases, they might fail to be retracted far enough to get out of the way of the tackers, with the result that the tacks could not be driven into the shoe (Qs. 133-134, I, 419-420).

Thus the machine could not operate successfully except with certain particular shoe sizes.

The District Court witnessed the operation of a model of the mechanism of the expired patent (Plff's. Ex. 35), and understood its defects.

The Court found (Finding 29, I, 481) that

"The, earlier McFeely patent No. 1,129,881 discloses a machine in which, during the power stroke, after certain 'feelers' or stops on the tackers contact the shoe or the heel band, the wiper plates are withdrawn during the rest of the power stroke of the machine."

And, as to the consequences which resulted from this arrangement, the Court said (Opinion, I, 483):

*Defendant's brief (pp. 13, 14) asserts that this dragging back of the leather was avoided by depressing the shoe, and defendant purports to support this assertion by a quotation from the patent. Defendant has, however, either misunderstood or ignored the difficulty here involved. The objectionable dragging back of the leather takes place *before the tacks are driven* (D.C. Opinion, I, 483). But the depressing of the shoe which is asserted by defendant to avoid this objection does not take place until "*after the tacks are driven*" (first McFeely patent, p. 6, lines 36-37, II, 288). At this point in the operation of the machine the damage has already been done and nothing can remedy it.

"the earlier McFeely patent lacked, so far as it relates to Claims 6 and 85, certain elements which prevented it from being commercially successful; that is to say, among others, it would not permit of a successful operation upon a range of shoe sizes; the operation of the tackers and wipers could not be controlled with accuracy, or in other words, adjusted as are the tackers and wipers in the machine covered by the patent in suit; and also, immediately before the tacking movement the wipers would be retracted partly to permit of the tacking and in so doing have a tendency to pull the upper from the insole, which would tend in some instances to and in many operations did make an imperfect job, if not damage the shoe. This was overcome in the machine covered by the patent in suit by the wipers moving in toward the shoe, holding the upper in place rather than pulling the upper away from the last, prior to the tacking as in the earlier McFeely patent."

THE TACKER-WIPER MECHANISM OF THE PATENT IN SUIT (CLAIMS 6 AND 85).

In the machine of the patent in suit McFeely provided a new form of tacker-wiper mechanism which obviated the difficulties experienced in the tacker-wiper mechanism of his previous machine; and it is to this different and successful tacker-wiper mechanism (which defendant has found it necessary to copy, although quite free to use the tacker-wiper mechanism of the expired patent) that claims 6 and 85 of the patent in suit are directed.

What McFeely did in the machine of the patent in suit as regards tacker-wiper mechanism was this; (a) he so interconnected the tackers and the wipers that *the tackers participate in all movements of the wipers*, and he therefore obtained and preserved at all times a fixed and proper

relationship in position of the tackers with reference to the margin of the wipers; and (b) he combined this with mechanism by which a preliminary adjustment of the positions of the wipers, according to the size of the heel and according to the lasting allowance of the upper of the shoe to be lasted, might be made.*

As a result of this arrangement, since the tackers participate in all movements of the wipers both in the preliminary adjustment and in the power stroke of the machine, the tackers are always at a proper position with reference to the edges of the wipers, so as to drive the tacks at the proper place, whatever the size of the heel being operated upon may be, and whatever the width of the lasting allowance of the shoe upper.

Thus McFeely, for the first time, provided, as far as the tackers and wipers are concerned, a practicable machine capable of successful commercial use on the range of shoe sizes upon which such a machine must work in the ordinary shoe factory.

The "tacker-wiper" claims in suit state clearly and succinctly the new combination of elements which McFeely invented. These claims read as follows:

"6. A machine of the class described having, in combination, end lasting wiper plates for closing over a last bottom, manually operable means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last, means to effect bodily and swinging movement of the wiper plates to wipe said marginal portions over the bottom of the last into position to be fastened on the bottom of the last, and tacking units co-operating with the wiper plates and having means to maintain

*The tacker-wiper mechanism of the patent in suit is more fully explained in the Appendix hereto (p. 40).

them in predetermined relation to the wiper plates in all positions of adjustment of said plates.

"85. In a machine of the class described, the combination with last and shoe positioning means, of end embracing wipers, means for effecting a preliminary adjustment of the wipers to the contour of the shoe, additional power means for subsequently operating the wipers, and tackers connected to the wipers for preliminary adjustment with them and for power effected movement with the wipers subsequently over the shoe."

DEFENDANT'S ARGUMENT FOR WANT OF INVENTION.

Defendant argues with reference to this aspect of the case that the arrangement of tacker-wiper mechanism described in the claims was obvious in view of the fact that previous bed machines had contained mechanism for making a preliminary adjustment of the wipers according to the size of the shoe.

The argument entirely overlooks the fact that in these prior bed machines *there were no tackers to be reckoned with, and that it was the presence of the tackers and the problem of how to insure that the tackers would drive their tacks at the right place regardless of shoe size that gave rise to the whole problem* (see p. 10, *supra*).

The argument also erroneously assumes that all that McFeely did in this patent as regards the tacker-wiper mechanism was to add to his previous machine a mechanism for the preliminary adjustment of the wipers. The fact is, to the contrary, that the invention did not consist in merely adding a preliminary adjustment for the wipers, but in combining, with such adjustment means, connections between tackers and wipers such as to cause the tackers to move with the wipers both during the preliminary adjustment and during the power stroke of the machine, so that

the tackers are always maintained in proper relation to the wiper plates, and therefore occupy the proper position for effecting the tacking stroke, whatever the size of the heel being lasted.

Defendant, in connection with its argument for non-invention, refers (Br., pp. 22-24) to a patent which it calls "the basic Copeland patent No. 244,714 (Vol. II, p. 114) issued sixty years ago", and says of this patent that

"All of the mechanism and movements for heel seat lasting in a power machine with automatic tacking are found in this early patent."

If "all the mechanism and movements for heel seat lasting in a power machine with automatic tacking" had been, in fact, disclosed to the art in a patent issued 60 years ago, it would be strange, indeed, that the industry put up with the inconvenience, slowness and defects of the "bed" machines, and continued to drive the lasting tacks by hand, for all the years intervening between that date and the date when McFeely made his invention.

The actual fact is that although the patentees of the Copeland patent *sought* to provide an apparatus which would improve on the "bed" machine and drive tacks automatically, the "bed" machine was preferable to anything which they had to offer.

The Copeland patent represents nothing but an abortive attempt at a machine which is demonstrably incapable of practical use (Appendix, *infra*, pp. 46-49).

And, as to the further assertion contained in defendant's brief at p. 23 that Copeland provided "adjustable wiper actuators C¹" which made it possible for him "to preterminately adjust, before the movement of closing the wipers, the relative position of the wipers with respect to the shoe to accommodate different sizes and rights and lefts", this is simply not the fact. The member C¹ which defendant calls "adjustable wiper actuators" is merely the

frame of the machine, and is so described in the patent (Appendix, *infra*, p. 49).

The District Court found as facts that the features of construction defined in McFeely's tacker-wiper claims were "new and useful" and "involved invention over the prior art" (Findings 25, 35, I, 481, 482). >

DEFENDANT'S ASSERTION THAT THE FIRST McFEELY PATENT SHOWED A "PREDETERMINED WIPER ADJUSTMENT".

Defendant's brief describes on p. 11 what it calls a "predetermined wiper adjustment" of the first McFeely patent; and the statement that there was such an adjustment in that patent occurs repeatedly in the brief (see, for example, p. 17 and the parallel column insert opposite p. 17). Also, the legends applied to the drawings of the first McFeely patent in the sheet of drawings appended to the brief label certain parts as "means for the predetermined adjustment of the wipers to initially position the wipers for different sizes of shoes", using exactly the same terms which the legends applied to the drawings of the McFeely patent in suit on the same sheet employ.

There is no wiper adjustment whatsoever, "predetermined" * or otherwise, in the machine of the first McFeely patent, and the patent will be searched in vain for any reference to such an adjustment. The passages of the patent cited in defendant's brief as purporting to show a "predetermined wiper adjustment" (Br., pp. 11, 12) show nothing of the sort. The "spring 88" to which the brief refers (p. 12) as the "predetermined adjustment" has no such function or effect. Varying the tension of this spring merely varies the force required to retract the wiper; it does not and cannot have any effect whatsoever on the

* We find it difficult to comprehend the meaning of the word "predetermined" as describing an adjustment.

initial position of the wiper or on the extent of the retraction of the wiper or on the point in the operation of the machine at which this retraction takes place. It makes no difference in the wiper movement.*

And if defendant were right in its pretense that this spring 88 is a form of "predetermined wiper adjustment," still it would not be the wiper adjustment of the patent in suit, which is, as described in the claims, "means for effecting a preliminary adjustment of the wipers to the contour of the shoe" (claim 85), "means determinately to adjust the positions of the wiper plates to initially position the wiper plates to act on the marginal portions at the end of a shoe upper mounted on the last" (claim 6).

DEFENDANT'S ATTACK ON THE FORM OF THE CLAIMS.

Defendant's brief, citing the decisions of this Court in *Bassick v. Hollingshead*, 298 U.S. 415 and *Lincoln v. Stewart Warner Corp.*, 303 U.S. 545 argues that

"It is immaterial whether such adjustments were mere substitutions of one adjustment for another already old in the art, or the adjustments themselves were *per se* new and better. In any event, there is no excuse to reclaim the old heel seat lasting machine by either substituting one adjustment for another or adding an improved adjustment." (Dfts. Br., p. 8)

*"Q. 126. I will ask you, Mr. Willhauck, whether there is in that mechanism any preliminary adjustment whatsoever for the wiping position. A. There is not." (I, 417.)

"Q. 89. Please state whether you find in that prior art patent to McFeely 1,129,881 any means for effecting a preliminary adjustment of the wipers to the contour of the shoe. A. No, sir, there is none." (McNulty, I, 465.)

"This patent discloses no means for adjusting the position of the wipers or tackers preliminary to the power stroke." (D.C. Finding 29; I, 481).

See also Appendix, pp. 41-42.

Again the brief says (p. 16):

"These adjustments should have been, of course, claimed *per se* if they were new instead of claiming them as elements of the entire combination which was otherwise old."

And at p. 29 the brief says

"McFeely did not stop with patenting these adjustable features themselves, but included the old features of the first McFeely patent which expired in 1932. McFeely, in his present claims, clearly failed to point out what he invented, if anything, but comingled his alleged improvements with an old heel seat lasting machine which was public property."

This criticism of the claims is utterly unfounded.

The claims do not purport "to reclaim the old heel seat lasting machine" by "substituting one adjustment for another", or "adding an improved adjustment", or to "comingle his alleged improvements with an old heel seat lasting machine". *They recite only those elements which cooperate to produce the "new result" and "new unitary mode of operation of the entire machine" found by the court below to have been the result of McFeely's invention.*

Since the invention consists in a relationship and interconnection between tackers and wipers which finds its utility in an automatic heel seat laster, the claims properly begin with the introductory clause "A machine of the class described" (claim 6), or "In a machine of the class described" (claim 85).

Claim 6 describes the invention as a combination of wiper plates, adjusting mechanism for the wiper plates to initially position them to act on the marginal portions at the end of a shoe upper mounted on a last, means to effect

bodily and swinging movement of the wiper plates to do their wiping work during the power stroke of the machine, tackers cooperating with the wiper plates and means to maintain the tackers in predetermined relation to the wiper plates in all positions of adjustment of said plates.

Claim 85 defines the combination as including last and shoe positioning means, wipers, means for effecting a preliminary adjustment of the wipers to the contour of the shoe, power means for subsequently operating the wipers, and tackers connected to the wipers for preliminary adjustment with them and for power-effected movement with the wipers subsequently over the shoe.

The claims do not purport to cover as part of the invention any elements whatsoever other than those elements which are involved in the new interrelationship, nor any element the operation of which is unchanged. If they had omitted any element which they name, they would have been criticized as incomplete and not stating the true invention.

Defendant's brief, as a phase of its argument that "these adjustments", as the brief calls them, should have been claimed *per se*, "instead of claiming them as elements of the entire combination which was otherwise old" (Br., p. 16), repeatedly asserts that

"The adjustments may or may not be used; and if used, are always operated *before* the lasting machine starts operating." (Emphasis in original) (Dfts. Br., pp. 7, 31, 32, 35, 43, 48).

This argument, in the first place, assumes what is not true; that the claims are so phrased as to cover the "entire combination which was otherwise old". As we have pointed out, there is no mention in the claims of any elements of the laster except those directly involved in the new combination.

The introductory clauses with which the claims begin, "A machine of the class described", or "In a machine of the

class described", under well-recognized principles of claim construction, import no structural elements into the claim, but merely define the environment or class of apparatus in which the invention defined in the body of the claim finds its utility.*

Also, defendant's argument erroneously assumes that the invention to which the claims are directed is merely an adjustment mechanism which operates only "before the lasting machine starts operating". On the contrary, a vital part of the mechanism involved in the new combination is an interconnection between tackers and wipers such that the tackers move with the wipers *during the power stroke of the wipers* as well as during any preliminary adjustment of the wipers, and it is because of this interconnection, *operative during the power stroke*, that the tackers, at the end of the power stroke of the wipers, are in the proper position with reference to the margins of the wipers to drive their tacks, regardless of the size of the shoe being lasted.

*An introductory clause is, of course, not nugatory; it limits the invention claimed to the art or general class of apparatus which it defines, *Nordberg Mfg. Co. v. Woolery Co.*, 79 Fed. (2d) 685, 690, (C.C.A. 7th,) but it imports nothing by way of structural elements into the claim.

In *Stearns & Co. v. Russell*, 85 Fed. 218, 224 (C.C.A. 6th) the Court said, as to an introductory clause reading "In pill dipping mechanism":

"These words are only used to define the useful purpose to which the patentee intended his device to be devoted, and cannot bear the construction by which all the other substances and parts used in dipping pills may be considered as making up the combination claimed."

In *Ford Motor Co. v. Parks & Bohne*, 21 Fed. (2d) 943, 946 (C.C.A. 8th) the Court, dealing with an introductory clause reading "An automobile transmission band", said that an introductory clause of a claim

"imports nothing by way of structural elements into any of these claims. . . . These words merely state the environment in which the device is to be used."

The principles for which the decisions in the *Bassick* and *Lincoln* cases stand have no application to these claims.

In the *Bassick* case (*Bassick Co. v. Hollingshead Co.*), 298 U.S. 415, the patentee Gullborg, having invented and patented in a patent not in suit a new form of pin fitting, undertook in certain of the claims of the patent in suit (14 and 15) to claim that pin fitting in combination with "any form of grease gun whether that claimed in his patent or unpatented and old in the art" (pp. 424, 425). He also invented an improved form of coupler shown in the patent in suit, but instead of patenting this as such, he claimed (claims 1-6, 8 and 10) "a combination of pump, hose coupler and pin fitting, and embodied in the combination his improved form of coupler" (p. 424).

The Court said (p. 425):

"The question, then, is whether, by this method, the patentee, by improving one element of an old combination whose construction and operation is otherwise unchanged, may, in effect, repatent the old combination by reclaiming it with the improved element substituted for the old element. That this cannot be done is shown by numerous cases in this and other federal courts."

In the *Lincoln* case (*Lincoln Co. v. Stewart Warner Corp.*), 303 U.S. 545 the inventor Butler, as the Court said (p. 549), did no more than invent a patentable improvement in a chuck, but his claim was directed to a combination including the new chuck, a nipple, and a grease gun (p. 548).

The Court said (p. 549):

"As we have said of Gullborg in the *Rogers* case, having hit upon this improvement he did not patent it as such but attempted to claim it in combination with other old elements which performed no new function in his

claimed combination. The patent is therefore void as claiming more than the applicant invented. The mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than that theretofore performed or produced by them, is not patentable invention. And the improvement of one part of an old combination gives no right to claim that improvement in combination with other old parts which perform no new function in the combination."

As contrasted with the claims involved in the cases cited by defendant, the claims here involved *recite those elements, and those elements only, which co-operate to produce the new result.*

The Court of Appeals was entirely familiar with the principle enunciated in this Court's decisions in *Bassick v. Hollingshead* and *Lincoln v. Stewart Warner Corp.* and, in fact, cited those decisions in its opinion (I, 511, 513); but it *correctly found the facts in this case to be such as to render that principle inapplicable.*

The Court said (I, 511):

"Taken together, the improvements in the second McFeely machine gave a new result and a new unitary mode of operation of the entire machine. There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element, as in *Bassick v. Hollingshead*, 298 U.S. 415, or *Kodel Electric & Mfg. Co. v. Warren Clock Co.*, 62 Fed. (2d) 692 (C.C.A. 6th)."

"The patent in suit is not merely the aggregate of laster and tacker, and the disclosed improvements upon prior art are not limited to the addition of adjustability."

THE SLIDING HEEL BAND ADJUSTMENT OF THE PATENT IN SUIT—CLAIMS 23 AND 91.

Another feature of construction in which McFeeley in his patent in suit improved not only over the machine of his first patent, but over all prior art mechanisms, is found in what is known in the record as the *sliding heel band adjustment mechanism*.

This is the mechanism to which claims 23 and 91 in suit relate.

In the machine of the patent in suit (as in the machine of McFeeley's first patent and in some of the "bed" lasting machines of the prior art) there is provided a U-shaped leather band, called a "heel band", which is adapted to grip the heel end of the shoe and hold it firmly during the lasting operation in proper position for the action of the wipers and tackers. Such a heel band is shown at 60 in Fig. 6 of the patent in suit (II, p. 10) and its position with reference to the wiper plates 254 is shown in Fig. 5 on the same page. The manner in which the heel band embraces the heel of the shoe being lasted is shown in Fig. 9 of the patent (II, p. 12).

The heel band should be adjusted forwardly or rearwardly, according to the size of the shoe to be operated upon, in order that the heel of the shoe, whatever its size, may be properly positioned, lengthwise, with reference to the wipers and tackers.

The essential feature of the heel band adjustment mechanism shown in the McFeeley patent in suit is that this mechanism is such that the heel band *slides* with relation to its supports and with relation to certain pressure members which, during the lasting operation, exert pressure upon its sides.

Because of this free sliding movement, the band does not buckle as it is moved back and forth, and, furthermore,

movement of the band leaves the pressure members unaffected so that the direction and force of their pressure is independent of the position of the heel band (I, 102-104) and this pressure may be applied at varying distances from the bight of the band.

Neither in the first McFeely patent nor anywhere else in the prior art is there to be found such a sliding heel band adjustment, and so the District Court found.

The findings of the District Court on the matter are as follows:

"6. The sliding heel band adjustment claims, Nos. 23 and 91, are specifically directed to mechanism in which the heel band is adjustable lengthwise of the last, to accommodate shoes of different sizes; and in such adjustment the heel band slides relative to its side supporting members and to its pressure members." (I, p. 478).

"26. The features of construction defined in the sliding heel band adjustment claims of the McFeely patent in suit, Nos. 23 and 91; were new and useful." (I, p. 481).

"29. . . . This patent [the first McFeely patent 1,129,881] discloses no . . . lengthwise adjustment of the heel band in which the band slides relative to its supports and pressure members. . . ." (I, p. 481).

"33. The prior patents cited by defendant against claims 23 and 91 of the McFeely patent in suit, such as the Brock patents Nos. 601,935, 1,002,818, and 1,188,616; Cavanagh No. 1,130,142, and others, taken singly or in combination, fail to disclose the sliding adjustment of the heel band disclosed in the McFeely patent in suit and claimed in claims 23 and 91 thereof." (I, p. 482).

The assertions of defendant's brief (p. 7 and elsewhere)

that "sliding heel band adjustment before the lasting operation for the in and out movement of the shoe" was "old in prior art patents" is, thus, *contrary to the fact finding of the District Court.*

The form of heel band mechanism which McFeely provided in his first machine was entirely different from, and inferior to, the sliding heel band adjustment of the patent in suit.

As the Court of Appeals found (Opinion, I, 511):

"The heel band of the first McFeely machine was loose and without support and incapable of sliding movement. Upon the withdrawal of the shoe the heel band was ejected as a result of the release of spring tension upon a plurality of cords." *

Defendant's further argument that even if the sliding heel band adjustment disclosed in the patent in suit was new, useful and inventive, still the claims directed thereto should be held void because, as defendant argues (Brief, p. 40 and elsewhere), the patentee made a "mistake" "in patenting an old combination instead of patenting the invention he had made", is as unwarranted as the similar argument made by defendant with reference to the tacker-wiper claims, which we have discussed above (pp. 18-23).

Claim 91 is typical of the two claims in suit directed to this subject matter. It reads:

"91. In a machine of the class described, the combination with last and shoe positioning means, of an end embracing band for clamping the upper round the lateral periphery of an end of the last, supporting

*In the Appendix hereto we describe in detail the sliding heel band adjustment of the patent in suit (p. 42), the heel band mechanism of the expired McFeely patent (p. 44), and the forms of heel band adjustment shown in the other prior art patents mentioned in defendant's brief (pp. 45, 46).

means relatively to which the opposite side portions of the band are permitted to slide lengthwise of the shoe, and means connected to the end portion of the band for adjusting it lengthwise of the shoe and relatively to said supporting means."

This claim is no more subject to the criticism to which the claims involved in *Bassick v. Hollingshead*, *supra*, and *Lincoln v. Stewart Warner*, *supra*, were subject than are the tacker-wiper claims. It does not purport to "repatent an old combination by reclaiming it with the improved element substituted for the old element" (*Bassick v. Hollingshead*, 298 U.S. at p. 425). It recites merely those elements which are directly involved in the sliding heel band adjustment, to wit, the "last and shoe positioning means" (i.e. the jack, with reference to which the heel band must be positioned), the heel band, the supporting means for the band with reference to which the band has a sliding connection, and the mechanism for adjusting the position of the band relatively to the supports; and the claim indicates the class of apparatus in which the combination claimed has its field of use by the introductory clause, "In a machine of the class described."*

*Claim 23, also directed to the sliding heel band adjustment mechanism, reads as follows:

"23: A lasting mechanism of the class described having, in combination, a substantially U-shaped flexible clamping member to embrace one end of a last and shoe upper, means to support a last and shoe upper with one end positioned within said clamping member, a movable adjusting member connected to the lower edge of said clamping member at its rear closed end, means to support the lower edges of said clamping member at opposite sides, pressure members arranged to engage the opposite sides of the U-shaped clamping member at points above its lower edges and to press said sides inwardly to force the end of the upper in close conformity to the last, manually operable means to move said adjusting member to slide the U-shaped

GENERAL CLAIM 42.

McFeely's claim 42 is, as it was called by the Court of Appeals (I, 507) a general claim. It reads as follows:

"42. A machine of the class described having, in combination, clamping means to embrace one end of a last and shoe; end wipers positioned to operate on the edges of the upper at said end of the shoe, a hold-down mounted for vertical movement and positioned to engage the bottom of the last and shoe, a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down, power operated mechanism effective to move said support forcibly to press the last and shoe against said clamping means and hold-down and to actuate the clamping means, mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers, mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe, the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidentally correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the

clamping member relatively to said pressure members, means to operate said pressure members to clamp the shoe upper, and end wiping mechanism to wipe down the edges of the upper over the bottom of the last."

This claim goes into somewhat greater detail than claim 91 and is narrower than claim 91 in that it includes certain limitations not stated in claim 91.

shoe bottom positioned substantially in the plane of the wipers, and the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last and shoe, and manually adjustable means for determinately varying the amount of vertical movement of the hold-down."

This claim recites the sequence in which various named elements of the machine and particularly the "hold-down" operate.

According to the claim, there is provided a mechanism which depresses the hold-down below the plane of the wipers before the first stroke of the wipers takes place and thereafter raises the hold-down; after which the wiper mechanism operates again, etc.

The District Court described the subject matter of the claim as follows:

"Claim 42 is directed to a machine having the general characteristics and sequence of hold-down movements of that shown and described in the patent, one element of which machine is manually adjustable means for determinately varying the amount of vertical movement of the hold-down." (I, 478).

A reason for the emphasis placed upon that element of the claim which is described as "manually adjustable means for determinately varying the amount of vertical movement of the hold-down" is that defendant asserted that it avoided infringement of this claim because it had no such adjustable means.

On this issue of fact there was a conflict of testimony. The plaintiff's witnesses Ryan and Condon testified that when they inspected one of defendant's machines prior to the trial such a device was present in it; but the particular

instrumentality which they testified they saw on the machine was not present on the machine produced by defendant at the trial, and certain witnesses for the defendant testified that it had never been present on defendant's machines.

The District Court found that the testimony of the plaintiff's witnesses was true and not that of defendant's witnesses; and the Court found, furthermore, that although the machine produced in court did not have the particular element which had been present on the machine before the trial, it did have another element which responded to the requirements of the claim.

The District Court said on the point of the conflict of testimony (Opinion I, 484):

"On the issue of fact as to infringement the Court holds with the plaintiff, based on the testimony of witness Ryan, who testified that the hold-down adjustment mechanism was in place on the machine when he saw it at defendant's plant";

and the formal finding of fact on the subject made by the District Court was as follows:

"Defendant's machine produced in court had a stop for determining the amount of vertical movement of the hold-down. . . . Originally, defendant's machine had a form of adjustable stop similar to that shown at 'X' on the photograph of the Moenus automatic heel seat laster, Plaintiff's Exhibit 10. Whichever of these forms is used, the machine has manually adjustable means for determinately varying the amount of vertical movement of the hold-down." (Finding 16, I, 480).

These findings were affirmed by the Court of Appeals (I, 507, 508).

Defendant's brief neglects entirely in its consideration of this claim the fact that the claim is directed to a series of

elements operating in a particular sequence. It treats the claim as if its only feature of importance was the element described in the claim as "manually adjustable means for determinately varying the amount of vertical movement of the hold-down", which element it asserts was shown in the first McFeely patent and also in a prior art patent to Pym.

Even this latter assertion is not correct, and both of the lower courts so found.

The District Court found (Finding 29, I, 481) that the first McFeely patent did *not* disclose "any adjustment for varying the amount of vertical movement of the hold-down".

And the Court of Appeals concurred, saying (I, 511):

"There was absent in the prior McFeely machine means for adjusting the vertical movement of the hold-down that are present in the patent in suit."

Also, as to defendant's claim that the prior Pym patent disclosed such an adjustment, the District Court expressly found to the contrary in Finding 30 (I, 481, 482):

"The Pym patent does not disclose . . . any means for adjusting the amount of vertical movement of the hold-down."

Since we find in defendant's brief no effort to show that mechanism operative in the sequence defined in this claim was present either in the first McFeely patent or elsewhere in the prior art, and since the District Court expressly found to the contrary, there appears to be no reason for going into detail on this subject.

The findings of the District Court on the point are as follows:

" . . . This patent [the first McFeely patent] does not disclose the sequence of operations of the McFeely patent in suit, as defined in claim 42 in suit. . . ." (Finding 29, I, 481).

"The Pym patent does not disclose the sequence of operations called for by claim 42 of the McFeely patent in suit." (Finding 30, I, 482):

Defendant's attack on the form of this claim is of a piece with its attack on the form of the other claims previously discussed. It is based upon the erroneous assumption that the subject matter of the claim is merely an adjustment mechanism which operates in advance of and is independent of the lasting operation. To the contrary, the claim is directed to a combination of elements operating in a particular sequence during the lasting operation.

ALLEGED "AGGREGATION".

Defendant's brief argues (pp. 2, 44-52) that the claims in suit merely "aggregate old adjusting features with an old combination" and that, therefore, the decision of the Court of Appeals conflicts with "the principles applied in such cases as *Grinnell v. Johnson*, 247 U.S. 426."

This argument, which is made under the heading (p. 44) "Aggregation: Another Form of an Attempt to Repatent Expired Old Combinations", is a mere restatement of defendant's argument that all that McFeely did in the patent in suit was to "aggregate old adjusting features with an old combination", with which argument we have already dealt.

The case of *Grinnell v. Johnson*, cited, stands for the proposition that merely bringing together "old elements performing well known functions, producing no novel and useful result" is not invention (247 U.S. 426, 431). The Court of Appeals was familiar with this principle, and in fact cited *Grinnell v. Johnson* in its opinion (I, 511), but it held the principle inapplicable to the facts of the present case because it found that

"The improvements in the second McFeely machine gave a new result and a new unitary mode of operation of the entire machine. There is here much more than mere improvement in quality or quantity of product due to the independent functioning of an improved element." (Opinion, I, 511).

ALLEGED ERRONEOUS RELIANCE OF COURT OF APPEALS ON "COMMERCIAL SUCCESS".

Defendant's brief asserts (p. 3 and pp. 52-62) that the Court of Appeals held McFeely's second patent, in suit, valid over the first McFeely patent only because "the second was more successful commercially than the first"; and asserts that the decision was, therefore, "contrary to the doctrine established by this court in *Smith v. James* and *Smith v. Hill*, 301 U.S. 216, and numerous other cases."

The brief says (p. 53):

"The Court of Appeals founded its decision on the contrary principle to that established by this Court, that is, that even if the anticipating structure operated successfully, if the machine of the patent in suit was more commercially successful, then there could be no anticipation." (Emphasis in original.)

The decision of the Court of Appeals was founded on no such basis. It was founded upon the fact that structural improvements embodied in the second machine not found in the first machine "gave a new result and a new unitary mode of operation of the entire machine" (Opinion, I, 511).

The significance of the facts, noted by the Court of Appeals, that whereas only one machine was ever built in accordance with the first McFeely patent, and that one machine was scrapped, while the automatic heel seat lasters of

the patent in suit have gone into wide use, more than 1200 of them being in operation throughout the world (Opinion, I, 510) is that such a comparison attests the practical importance of the improvements made in the second patent which were not present in the first patent; and this was the significance attached to these facts by the Court of Appeals.

Thus the Court said (Opinion, I, 510):

“Between commercial success demonstrated by brief use of a single machine abandoned and not duplicated, and commercial success of the machine of the second patent, there yawns a wide gulf, not to be bridged merely by insistence that the second McFeely patent advanced the art *but in minor and inconsequential details.*”

It is also highly significant as to the importance of the improvements shown in the patent in suit as compared with the structure of the first McFeely patent, that the manufacturer of defendant's machines, when it set out to build an automatic heel seat laster, *copied not the structure of the first McFeely patent, which it was free to use, but the structure of the McFeely patent in suit (supra, p. 2).*

**THE REASONS ADVANCED IN THE PETITION FOR ALLOW-
ANCE OF THE WRIT ARE SHOWN TO BE
UNFOUNDED.**

As the “reasons relied upon for the allowance of the writ” defendant's petition for certiorari asserted (1) that the Court of Appeals had rendered a decision in conflict with the decisions of this Court in *Bassick v. Hollingshead*, 298 U.S. 415 and *Lincoln v. Stewart Warner*, 303 U.S. 545, “prohibiting the extension of monopoly of an expired patent by the substitution of mechanical details, already old in the art”, etc.; (2) that the Court of Appeals decision conflicted with the decision of this Court in *Grinnell v. Johnson Co.*,

247 U.S. 426 because, as asserted, the patent in suit "merely aggregates old adjusting features with an old combination"; (3) that the Court of Appeals decision conflicted with the decision of this Court in *Smith v. James*, 301 U.S. 216 because it had failed to assign anticipatory effect to the expired McFeely patent merely because that patent was "commercially unsuccessful"; (4) that there was "diversity of opinion below" in that one judge dissented from the decision of the Court of Appeals and "there is no opportunity of securing a diversity of opinion with other Circuits"; and (5) that the case is "one of great public importance to the public".

Analysis of the case shows, as to the first and second reasons relied upon, that the Court of Appeals was familiar with, and in fact cited in its decision, the decisions of this Court in the cases cited by defendant; *but found that the facts in this case did not bring it within those authorities.* The Court found that the patent in suit does not extend the "monopoly of an expired patent by the substitution of mechanical details already old in the art", and that the claims do not purport to cover merely aggregations of "old adjusting features with an old combination", but that, on the contrary, the improvements to which the claims were directed "gave a new result and a new unitary mode of operation of the entire machine" (I, 511).

Thus the first and second reasons assigned for the allowance of the writ prove, upon analysis, not to be valid reasons. *The case turned upon its facts, and not upon a question of law.*

As to the third reason assigned—the assertion that the Court of Appeals failed to assign anticipatory effect to the expired McFeely patent merely because it was "commercially unsuccessful", while the machine of the patent in suit has had great commercial success—this also is shown, upon analysis, to be incorrect. The decision was based upon the

fact that the expired McFeely patent did not disclose those improvements to which the claims in suit are directed, and that those improvements were shown by the record to have been of large importance.

As to the fourth reason assigned in the petition for the grant of the writ—the fact that one of the Circuit Judges dissented from the opinion and that, “there is no opportunity of securing a diversity of opinion with other Circuits”,—we do not suppose that this of itself is a sufficient reason, or was regarded by the Court as a sufficient reason, for the grant of the writ.

As to the final reason advanced, the alleged “public importance” of the case, the fact is that the case is of no more public importance than any other ordinary patent case.

There are no infringing machines of domestic manufacture, and, so far as appears, no users of the “Calzera” machine in this country except this defendant, which was sued because the German manufacturer of the machines could not be reached by process; nor is there any likelihood, in view of the war, that any more of these machines will be imported before the date when the patent in suit expires, which is October 27th of this year.

As to the machines which have been leased by the plaintiff, embodying the patented construction, the rentals paid for the use of these machines are ordinary rentals for the use of leased property.

If the Court agrees with the foregoing views, we respectfully suggest that it would be appropriate for the Court to dismiss the writ, as was done, under similar circumstances, in the following cases:

Keller v. Adams-Campbell Co., 264 U.S. 314;

Layne & Bowler Corp. v. Western Well Works, 261 U.S. 387;

Furness, Withy & Co. v. Yang-Tsze Insurance Assoc., 242 U.S. 430;

U.S. v. Rimer, 220 U.S. 547;

Davis v. Currie, 266 U.S. 182;

Erie R.R. v. Kirkendall, 266 U.S. 185;

Houston Oil Co. v. Goodrich, 245 U.S. 440.

CONCLUSION.

The Court of Appeals decision violates no principle announced by this Court in the cases relied upon by defendant or in any other cases.

Defendant's quarrel is with fact findings of the lower courts.

The question whether or not the quality of invention is involved in a patentee's construction is a question of fact.*

Likewise, the question whether the combinations described in the claims in suit "merely aggregate old adjusting features with an old combination", as alleged by defendant, or whether the structural elements of the claim cooperate to produce a new and unitary mode of operation, as held by the Court of Appeals, is a question of fact.

This Court has repeatedly said that it is an established rule that

"This Court accepts the findings in which two courts concur unless clear error is shown."**

*"The question whether an improvement requires mere mechanical skill or the exercise of the faculty of invention, is one of fact; and in an action at law for infringement is to be left to the determination of the jury." *Thomson Spot Welder Co. v. Ford Motor Co.*, 265 U.S. 445, 446.

***Pick Mfg. Co. v. General Motors Corp.*, 299 U.S. 3, 4;

Stuart v. Hayden, 169 U.S. 1, 14;

Texas etc. Railway Co. v. Railroad Commission, 232 U.S. 338;

(Footnote continued on next page.)

Independent analysis of the case shows, moreover, that the fact findings of the lower courts were entirely correct, and that the decisions of those courts involved no errors of law.

The decisions of the District Court and of the Court of Appeals were correct, and should be affirmed.

Respectfully submitted,

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(Footnote continued.)

Texas etc. Co. v. Brotherhood, 281 U.S. 548, 558;
U. S. v. Commercial Credit Co., 286 U.S. 63, 67;
Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 416;
Joseph Schlitz Brewing Co. v. Houston etc. Co., 250 U.S. 28;
Capitol etc. Co. v. Cambria Steel Co., 249 U.S. 334;
Just v. Chambers, 312 U.S. 383;
The Germanic, 196 U.S. 589, 595;
Continental; etc. Co. v. Chicago etc. Railway Co., 294 U.S. 648, 678.

APPENDIX.

Defendant has attached to its brief (p. 31; p. 67) several sheets of colored drawings and (p. 17) a "parallel column" chart supposed to demonstrate similarities between prior art structures, particularly that of the earlier McFeely patent, and the patent in suit. In order to demonstrate similarity between two structures, it is necessary to do more than to apply similar colors to patent drawings; it is necessary to show justification for the colors and legends applied. The legends and colors applied by defendant to these illustrations, as well as statements made in the chart and throughout the body of the brief regarding the structures, frequently depart so far from accuracy as to indicate an inadequate understanding of the construction and operation of the machines in question.

For example, at pp. 23, 24 of its brief, defendant calls the part *c*¹ of the Copeland patent No. 244,714, an "adjustable wiper actuator". This part, as stated in the Copeland patent (p. 2, lines 8-9), is merely "*the frame c¹ of the machine*".

Again, defendant's "Appendix A" bears coloring and legends, indicating in the structure of the earlier McFeely patent, "means for the predetermined adjustment of the wipers to initially position the wipers for different sizes of shoes", and defendant makes other statements to the same effect elsewhere in its brief. *There is no such means in the machine (infra, pp. 41-42).*

To undertake to list all the erroneous statements and legends in defendant's brief would require much space. We merely ask that this Court, before accepting the statement of either party as to such matters, satisfy itself that the statement made is correct.

DESCRIPTION OF THE TACKER-WIPER MECHANISM OF THE McFEELY PATENT IN SUIT.

Claims 6 and 85 in suit are directed to the tacker-wiper mechanism, which is illustrated particularly in Figs. 2 and 3 of the patent (II, 4, 6). Fig. 2 is a vertical sectional view through the head of the machine and Fig. 3 is a horizontal section.

The wiper plates 254 (Fig. 5) are positioned above the heel band 60 in position to wipe over the heel end of a shoe which is held in the heel band. The wipers are advanced and closed over the shoe by mechanism shown in Figs. 2 and 3 of the patent and comprising a cam track 228, a cam roll 226, a slide 224, bell crank levers 272, pinion gears 274 and slides 276. By this mechanism, simultaneous advancing and closing movement is imparted to the wiper plates.

The initial positions of the wiper plates are adjustable by means shown in Fig. 3 of the patent. By moving the hand lever 270, the pinion 268 moves the plate 264 with relation to the slide 276 and thus, through the link 284, opens or closes the wipers and tackers, thus adjusting their positions relative to the mechanism for operating them.

The patent in suit shows five tacker units (Fig. 3). Two of these units, numbered 282, are called "side" tackers, two, numbered 288, are called "corner" tackers, and one, numbered 234, is called an "end" tacker.

The side tackers are mounted on the plates 264 which close the wipers and are connected thereto by means of the nut and bolt (unnumbered), clearly shown in Fig. 3. The corner tackers are urged by springs 290 to follow the inward movement of the wipers, and the end tacker is urged by the spring 238 to follow the advancing movement of the wipers. The tackers are thus maintained in predetermined relation to the wipers in all positions of the wipers.

DESCRIPTION OF THE TACKER-WIPER MECHANISM OF
THE EXPIRED McFEELY PATENT NO. 1,129,881.

In this old patent McFeely attempted to coordinate the movements of the tackers and wipers so that these parts would automatically, during the power movement of the machine, position themselves properly whatever the size of the shoe being operated upon. This he undertook to do by providing "feelers" or "stops" 122 (Fig. 8) attached to the tack blocks 120, which feelers, by contacting with the shoe or with the heel band, were supposed to stop any further forward movement of the tackers and leave them in the proper position to drive their tacks; and to this was added mechanism which, when the advancing movement of the tackers had ceased, *would cause the wipers 70, 71, 72 to retract*, presumably far enough to allow the tacks to be driven without interference from the wiper plates.

This retraction or "backing up" of the wipers is described in the patent, p. 5, lines 33 *et seq.* and is illustrated particularly in Figs. 8 and 13 of the patent. When the stop 122 arrests the forward movement of the tacker block 120 and the slide 85, the beveled face of the "displaceable member" 84 wedges sidewise against the influence of the spring 88 and spring-pressed beveled plunger 87 (Fig. 8). When this happens, "the cam slot 842 acts on the stud 840 to retract the wiper slide and wiper slightly with relation to the shoe and with relation to the tack block so as to permit the tacks to be driven" (patent; p. 5, lines 40-44).

All this is described in the testimony of the witness Willhauck at Qs. 111-127, I, 411-417.

Defendant's brief (p. 20) says that when the resistance of the plunger 87 is overcome, the movement of the wipers will cease. To the contrary, the patent specifically states (p. 5, lines 33-44) that at this point the wipers are retracted

or pulled backwards with relation to the shoe and with relation to the tackers in order to permit tacks to be driven.

Defendant's version of the possibility of adjustment in the first McFeely patent, as stated in its brief at page 20, is that "manual predetermined adjustment" of the plunger 87 is accomplished by the spring 88. The patent itself contains no mention whatever of any adjustment of the wipers, either preliminary or otherwise, nor is there in the mechanism itself any capacity for such adjustment. Increasing the tension of the spring 88, as suggested by defendant, would merely oppose greater resistance to the power stroke of the machine. The function of the spring 88 is to permit sidewise movement of the "displaceable member 84" when the stops 122 arrest the movement of the slide 85, thus drawing the wipers back off the shoe (patent, p. 5, lines 33-43, II, 287). Regardless of the tension on the spring 88, this spring *must* yield when the stops 122 contact the shoe,—it must yield exactly at this point in the movement of the slides 85 and 850 and at no other point (patent, p. 5, lines 33-43). Thus it is evident that the spring 88 has no effect whatever on either the initial positions of the wipers or the extent to which they move over the shoe (*supra*, pp. 17-18).

DESCRIPTION OF THE SLIDING HEEL BAND ADJUSTMENT OF THE McFEELY PATENT IN SUIT.

Claims 23 and 91 in suit relate to the sliding heel band adjustment shown in the McFeely patent. In describing this mechanism, we shall refer to Figs. 4, 5 and 6 of the patent (II, 8, 10). Fig. 4 of the patent is a horizontal sectional view, looking downward on the heel band mechanism from the top of the machine. Figs. 5 and 6 are perspective details.

The heel band 60 is a U-shaped leather band adapted to grip the heel end of the shoe, which is mounted on a last

supported by a jack 148 (Fig. 1; II, 2). The heel band conforms the upper materials tightly to the contour of the heel end of the last. The band is slidably supported from below by hook-shaped metal clips 74 adjacent its open ends.

The heel band is closed about the shoe by the power-driven rack slide 130, which is actuated by the cam of the machine. Retraction of this slide moves the "equalizer" or operating member 134 rearwardly. Rearward movement of this member moves the rack members 136 and bell crank levers 138, to produce an inward motion of the open ends of the heel band toward each other. This inward motion is transmitted from the bell crank levers to the heel band through the springs 100 and the pressure members 84.

Mechanism for adjusting the heel band lengthwise of the shoe is provided and comprises (Fig. 4; II, 8) the arm 90 adapted to rotate the shaft 86, thus moving the rack slide 66, which is connected to the rear of the heel band by a clip 62 (Fig. 6, II, 10). By this means the heel band may be moved forward and rearward in the machine, in a direction lengthwise of the shoe.

It is important to note that in this lengthwise adjustment of the heel band, *the heel band slides in the supporting clips 74* (Fig. 5; II, 10). Neither the supporting clips nor the pressure members 84 move with the band, but these elements remain stationary while the band slides back and forth in response to manipulation of the adjusting arm 90.

The importance of this system, by virtue of which the heel band may be *slidingly* adjusted forward or backward *with reference to its supporting clips and pressure members*, without distortion and without varying the direction or amount of pressure applied to the band from the sides during the operation of the machine, has been mentioned above (pp. 24, 25) and is explained in more detail by the witness Willhauck at I, 102-104.

DESCRIPTION OF THE HEEL BAND MECHANISM OF THE
EARLIER McFEELY PATENT NO. 1,129,881.

The heel band mechanism of the prior McFeely patent is best shown in Fig. 19 (II, 282) of that patent, supplemented by Fig. 8 (II, 272). In the machine there are provided a plurality of cords, marked 50 in Fig. 8 (they are shown as four in number), which, as shown in Fig. 19, are attached at their outer ends to springs, unnumbered in Fig. 19, which tend to keep them tight. These cords pass around the ends of pivoted heads marked 51 in Fig. 19.

If a heel band is used in this device, as shown in Figs. 19 and 8, it must be fitted around the shoe before the shoe is inserted in the machine and then pushed into the machine with the shoe. In this position the cords pass around the sides and closed end of the heel band, as indicated in Fig. 19, and the tension on the cords, exerted by the springs to which their ends are attached, causes them to hold the heel band against the heel of the shoe while the machine operates.

The patent describes the cords referred to at page 3, line 130 to page 4, line 58.

Since the heel band is a loose part, when the shoe, having been lasted, is withdrawn, the cords, under the influence of the tension of the springs at their ends, *forcibly eject the heel band, along with the shoe.*

When the next shoe is to be operated upon, the heel band must be manually placed upon it, as before, and again inserted into the machine.

DESCRIPTION OF THE HEEL BAND MECHANISM OF THE
BROCK PATENT NO. 1,188,616.

In an insert opposite page 31 of its brief, defendant reproduces Figs. 9 and 10 of the drawings of this Brock patent and at pages 30-31 of the brief, defendant asserts that this patent discloses the heel band adjustment of the patent in suit.

This Brock patent shows in Fig. 10 a heel band which is supported by a chain 86 (resembling generally a bicycle chain). There is a hand wheel 96 by which the chain, and with it the attached band, may be moved forwardly and rearwardly, and another hand wheel 94 by which the rear end of the chain and band may be moved laterally.

There are recesses 84 in the bottom of the heel band (Fig. 9) which recesses are, as the patent explains (at page 3, lines 119-123) "chambered out as at 84 to reduce the weight of the band and to add to the resiliency of the end portions of the band."

There is in this construction *no means whereby the heel band slides relatively to its supports*, as in the McFeely patent in suit. In the Brock construction any movement which is imparted to the band is imparted to it *through its supporting chain*, to which the depending members are connected, *and the chain and those members move with the band*. The supporting chains are attached at their forward ends to spring tensioned pivoted members, as indicated in Fig. 1 of the patent (II, 384) so that if the chain is drawn backwardly by the mechanism 96, these pivoted members will yield inwardly, while if the adjustment mechanism is moved so as to allow the chain to be moved forwardly, these pivoted members will move it outwardly at its ends.

The District Court found (Finding 33, I, 482) that this Brock patent No. 1,188,616 does not disclose the sliding adjustment of the heel band disclosed and claimed by McFeely in the patent in suit.

HEEL BAND MECHANISMS OF OTHER PRIOR ART PATENTS.

At page 31 of its brief, defendant lists a number of additional patents alleged to disclose adjustment of the heel band in the manner of the patent in suit. Defendant does not support this general assertion with any description of the mechanisms involved and the reason it has not done so becomes evident upon an examination of the patents.

Of the patents listed by defendant at page 31, Eaton, No. 596,323, *does not disclose any heel band at all*. In Brock, No. 601,935, Copeland, No. 244,714, and Pym, No. 1,368,968, the heel bands *are not adjustable* lengthwise of the shoe (if, in fact, Copeland can be said to have any heel band).

In Lombard, No. 524,445, Plant, No. 958,280, and Keyes, No. 1,023,854, the mechanisms referred to by defendant as heel bands, if they are adjustable, have no sliding movement with respect to their pressure members and supporting members.

The District Court found (Finding 33, I, 482):

"The prior patents cited by defendant against claims 23 and 91 of the McFeely patent in suit, such as the Brock patents . . . and others, taken singly or in combination, fail to disclose the sliding adjustment of the heel band disclosed in the McFeely patent in suit and claimed in claims 23 and 91 thereof."



COPELAND PATENT NO. 244,714.

Copeland *et al* show, in Fig. 1, a support c^4 on which last-
ing appliances are mounted, and a rotatable support a^2
upon which the shoe to be lasted is mounted. The idea is
that, having lasted the toe of the shoe with the parts in the
position indicated in Fig. 1, the shoe and its support will
be revolved by the operator to present the heel to the ap-
paratus, and the apparatus will, likewise, be revolved 180°

to present to the shoe suitable heel lasting devices (not shown in the drawing) which are supposed to be located at the end of the member C opposite to that occupied by the toe-lasting devices shown.

According to the patent, the operator is to move the shoe forward until it compresses a clamping mechanism indicated at B, *b*, so as to clamp the flanges at the top thereof about the toe of the shoe, and the operator, while holding the shoe with one hand, is supposed to pull up the upper "by pinchers" (patent, p. 1, line 60), with his other hand. This having been done, he is supposed to shove the shoe farther forwardly, by which action he will move the bed C (Fig. 1), which is supported to slide horizontally in the frame *c*¹, and this forward movement of the bed C is supposed to cause plates D, D¹, as indicated in Figs. 2 and 4, which are pivotally supported upon a post *d* carried in the bed C and move therewith inwardly, to give a wiping movement over the upper, this movement being caused by the engagement of the outer ends of the plates with rollers *d*², *d*³ (Figs. 2 and 4) attached to a fixed part of the frame *c*¹; the result being that the plates, D, D¹ move from the position indicated in Fig. 2 to the position indicated in Fig. 4.

The Copeland structure is impracticable for the following, among other reasons:

(1). The forward movement of the shoe which causes the clamp B to engage the upper, so as to allow the upper to be pulled up by the pinchers and held in position, *will also move the slide forwardly, so that the wipers come in and close over the shoe prematurely, thereby preventing the use of the pinchers* (see the admission of defendant's expert Greene, I, 430).

(2). The only suggestion in the patent as to how the tack drivers EEE are to be made to reciprocate, rising and falling vertically, is (p. 2, lines 26-29) that they may be attached to "hinged blocks *e*¹". The legend "*e*¹", as seen

in Fig. 2, indicates the "folding plates" elsewhere denominated "D", which, according to defendant, are supposed to operate as wipers. *Thus, the patent says that the wipers operate to raise and lower the tack drivers*, which means that the wipers themselves rise and fall in a reciprocating movement, and when they rise, they must release the upper which they are supposed to be holding in position for the operation of the tackers.

(3). The "rod *d*", which is supposed to actuate the "hinged blocks *e*" (patent, p. 2, lines 29, 30) is mounted in a horizontally moving member C and therefore itself has a longitudinal motion. Yet the only means of reciprocating the "rod *d*" which the patent suggests is "a treadle when operated by foot power, and a cam or lever when operated by motive power". How a horizontally moving rod can be operated to reciprocate vertically by a treadle or cam or lever the patent leaves the reader to speculate, for the patent shows no such mechanism.

(4). The motion of Copeland's wipers, lettered D in the patent, is only a swinging movement. The rod *d* about which these elements are pivoted moves forward with the shoe, being mounted in a sliding member C which the shoe moves; so that there is no relative movement during the operation between the shoe and the wipers except the inwardly swinging movement of the wipers. Hence, there necessarily remains, as plainly shown in Fig. 4 of Copeland, a V-shaped portion of the upper, at the extreme end of the shoe, which receives *no wiping action whatever*; and this would be a fatal defect in the Copeland machine even if it were not hopelessly defective in many other respects. In the McFeely machine the wipers are given both a *bodily forward movement* and a swinging movement during operation,—a "bodily and swinging movement", as claim 6 in suit, describes it,—and thus all portions of the "lasting allowance" are properly "wiped".

The member *c*¹ of the Copeland patent, asserted by defendant (Br. pp. 23, 24) to be a means for adjusting the wipers, is merely *the frame of the machine* (patent, p. 2, lines 8-9).

In the Copeland apparatus, the extent to which the wipers close depends solely upon the extent to which the shoe is moved forward into the apparatus by the operator, as contrasted with the McFeely arrangement in which a power stroke of a definite fixed length is given to the wipers, whatever their original position, and in which the wipers (and with them the tackers) are primarily adjusted to an appropriate position depending upon the size of the shoe, in order to accommodate the machine to shoes of different sizes.

For all these reasons (and others which could be mentioned if it were necessary), the structure shown in the Copeland patent is not practical (McNulty, I, 464, Q. 87).

Such a patent teaches nothing but its own inoperativeness.

And the only true significance which the Copeland patent has is to show that as long as 60 years ago the need of an automatic laster was recognized. The patent is illustrative of the statement made by the Court of Appeals (Opinion I, 512) that

“The need for a machine of the type disclosed had long been recognized.”

SUPREME COURT OF THE UNITED STATES.

No. 332.—OCTOBER TERM, 1941.

The Williams Manufacturing Co., Petitioner, vs. United Shoe Machinery Corporation.	} On Writ of Certiorari to the United States Circuit Court of Appeals for the Sixth Circuit.
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[May 25, 1942.]

Mr. Justice ROBERTS delivered the opinion of the Court.

The suit was for the infringement of Claims 6, 23, 42, 85, and 91 of the McFeely Patent No. 1,558,737 for improvements in automatic heel lasting machines: The District Court held the claims valid and infringed.¹ The Circuit Court of Appeals affirmed.²

The defendant sought certiorari on the ground that the claims were invalid under recent decisions of this court because they constituted attempts to repatent a broad combination of old devices,—bed lasters and automatic tackers—and embodied only aggregations of new unpatentable mechanisms with old mechanical combinations. In pressing us to grant the writ, the petitioner insisted that it desired no retrial of the facts but merely a proper application of the law to the facts found by the courts below. We granted the writ.

In the manufacture of shoes, after the upper, the lining, and the counter have been placed on a wooden last, and an insole has been tacked to the last, the protruding edges of the materials are flattened over the insole and tacked down at the toe and shank of the shoe. The next operation is "heel seat lasting", which consists of conforming the upper materials and insole snugly to the contour of the heel of the last and fastening them down with tacks. Originally this was done by hand. Later so-called "bed" machines were used which employed horizontally moving plates called "wipers" to flatten the projecting materials over the heel seat,

¹ 29 F. Supp. 1015.

² 121 F. 2d 273.

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where they were tacked by hand. Heel lasting on a bed machine involves the repeated use of levers and a foot treadle, and the result is not uniform.

March 2, 1915, McFeely obtained a patent for a machine which would automatically perform, in one power stroke, the wiping and tacking necessary to complete the process of heel seat lasting. In this patent he claimed numerous combinations of means to accomplish specific steps in the process, amongst others combinations to effect the clamping of the last, and positioning it during the process, and to operate the wipers and the tackers in proper relation to the last. A declared purpose was that the machine should be able to last the heels of shoes of different sizes. One machine was built in accordance with the patent and used for some time. It was found to work satisfactorily on shoes of a small range of sizes but not to work on shoes of a wide range of sizes as would be required in the operations of the ordinary factory.

October 27, 1925, McFeely obtained the patent involved in this case for improvements³ of the lasting machine described in his earlier patent. The improvements embodied in the claims in suit had to do with a new combination of elements for clamping the last in the machine, a new combination of elements for the operation of wipers and tackers in fixed relation to each other and to the heel of the last, and a new combination of means for positioning the last, vertically and automatically altering the position during the operation. A manual adjustment was a part of each of these combinations by which the heel clamping, the wiping and tacking, and the vertical positioning mechanisms could be adjusted in advance for different sizes of shoes. The respondent is the assignee of both McFeely patents.

The petitioner purchased from a German maker, and used, four machines which were found by the courts below to be exact copies of the respondent's commercial machines made under the patent in suit. So thorough was the imitation that even minor features not covered by the patent were copied. At the time of the trial alterations had been made in the petitioner's machines, but the courts below found that these were for the purpose of avoiding infringement and that they were not effective to that end.

³ "Any person who has invented or discovered any new and useful machine . . . or any new and useful improvements thereof . . . may . . . obtain a patent therefor." R. S. 4886, as amended, 35 U. S. C. § 31.

If the petitioner's statements in support of the application for certiorari are taken at face value, the point for decision is extremely narrow. In argument, however, the petitioner sought to overturn the concurrent findings below and to have us re-determine the question of the novelty and usefulness of the improvements described in the combination claims held valid and infringed.

The courts below have concurrently found that none of the earlier patents cited, including that of McFeely, embodied the combinations of the challenged claims covering means for clamping and holding the last, means for the movement of wipers and tackers in fixed relation to each other, and means for the timed vertical positioning of the last during the power stroke of the machine, each combination including means for manually adjusting the mechanism in advance for different sizes of shoes. These findings are to the effect that the new combinations, while they involve old mechanical constructions, combine these in a new way so as to produce an improved result. These are findings of fact,⁴ despite the petitioner's apparent contention to the contrary, and we will not disturb such concurrent findings where, as here, there is evidence to support them.⁵ The claim that the combinations are merely of old elements, which perform no new function and produce no new result, must be overruled.

We come to the petitioner's contention that the courts below have held the patent valid and infringed on the theory that the improvements and adjustments disclosed in the claims entitle McFeely to repatent the entire combination of the old devices, known as bed lasters and automatic tackers. Petitioner argues that they have so held only because the mechanism of the patented machine permits of its operation upon a wider range of sizes of shoes than the machine earlier patented and that it does so operate merely because of three trifling mechanical adjustments which it embodies.

The contention is not in accord with the holdings below. It is true that both courts found that manual adjustments are provided which are not found in the earlier McFeely patent or in the prior art as applied to the three combinations embodied in

⁴ *Battin v. Taggart*, 17 How. 74, 85; *Bischoff v. Wethered*, 9 Wall. 812, 814; *Thomson Spot Welder Co. v. Ford Motor Co.*, 265 U. S. 445, 446; *Stilz v. United States*, 269 U. S. 144, 147.

⁵ *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U. S. 405, 416, 422; *Adamson v. Gilliland*, 242 U. S. 350.

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the claims in suit. But the findings do not stop there. In respect of each claimed combination, both courts have found that they embody other improvements, in addition to mere manual preliminary adjustments and that each combination exhibits invention in that its elements cooperate in a new and useful way to accomplish an improved result.

The petitioner, however, contends that the breadth of the claims in suit is such that, instead of patenting the combinations claimed as improvements over the prior art, and restricting the claims to the improvements, the patentee sought to blanket every machine which combines the old bed laster with the equally old automatic tacking device. It is said that our decisions in *Basick v. Hollingshead*, 298 U. S. 415, and *Lincoln Engineering Co. v. Stewart-Warner Corp.*, 303 U. S. 545, forbid any such extension of the patent monopoly.

We think, however, that each of the claims is confined to a combination of specified means applicable only to a restricted portion and function of the whole machine. In stating his claims the patentee sometimes says "a machine of the class described having, in combination," . . . Obviously, no machine will infringe which does not have in combination the means specified in each of the claims for accomplishing the particular portion of the total operation covered by the claim. Other claims refer to "a lasting mechanism of the class described having, in combination,"

. . . The same comment is applicable. Other claims read: "In a machine of the class described, the combination" . . . Such preliminary statement is commonly and properly used to specify the type of machine in which the claimed subsidiary combination of elements works an improvement over the prior art.⁶ In describing the novel combinations embodied in the claims, it was necessary to make reference to certain portions of the machine in connection with which the new combinations were to operate and with which they were to dovetail,⁷ but, in mentioning these other mechanical parts, the claim does not purport to embody

⁶ Compare e. g. *Grier v. Wilt*, 120 U. S. 412, 420, 421; *Morley Machine Co. v. Lancaster*, 129 U. S. 263, 266; *Keystone Manufacturing Co. v. Adams*, 151 U. S. 139, 142; *Deering v. Winona Harvester Works*, 155 U. S. 286, 289, 290; *Boyd v. Janesville Hay Tool Co.*, 158 U. S. 260, 264; *Kokomo Fence Machine Co. v. Kitselman*, 189 U. S. 8, 10, 14; *Altoona Publix Theatres, Inc. v. American Tri-Ergon Corp.*, 294 U. S. 477, 482.

⁷ Compare *McCormick v. Talcott*, 20 How. 402, 404; *Loom Company v. Higgins*, 105 U. S. 580, 586.

them as elements of the claimed combination. To construe such a claim for a combination of new elements intended to be embodied in some well recognized mechanical aggregation, such as a sewing machine or a washing machine; as a claim covering all the mechanical details, or all the well known parts of the machine, would be to nullify every patent for an improvement in a type of machine long in use and would invalidate thousands of patents for improvements in standard machines. It would be difficult to describe an improvement in a washing machine without naming such a machine as the thing to which the patent is addressed and equally difficult to refrain from referring to various parts of the machine, such as the tub or the motor which actuates the washer. But it has never been thought that a claim limited to an improvement in some element of the machine is, by such reference, rendered bad as claiming a monopoly of tubs or motors used in washing machines.

Bassick v. Hollingshead, supra, and *Lincoln Engineering Co. v. Stewart-Warner Corp.; supra*, lend no support to the petitioner's argument. Those were suits for contributory infringement. In the *Bassick* case, the invention was of an improved pin fitting for receiving grease. The combination claimed was stated as a combination of a grease gun, a coupler, and a pin fitting of the improved type. It was sought to convict one who sold grease guns, common in the prior art, of contributory infringement because the seller knew, and intended, that the guns should be used with the improved pin fitting. The effort was to extend the monopoly embodied in the improved pin fitting so as to prevent sale or use of well known grease guns of the prior art, although whatever was novel in the improved pin fitting was peculiar to itself and had nothing to do with the grease gun commonly used in connection with all pin fittings. Had the claim merely recited that it applied to an improved type of pin fitting to be used in connection with grease guns and couplers, the claim for the pin fitting would have been good and would not have been rendered bad by the statement that the fitting was intended for use in connection with those other instrumentalities.

The *Lincoln Engineering* case went on the same principle.

The present suit for infringement is not for the use of an automatic bed lasting and tacking machine as such. It is for the use in such a machine of improvements of certain features of

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the machine. The respondent does not pretend to fix liability on the petitioner for contributory infringement by reason of the use of an automatic power driven lasting and tacking machine which does not employ the novel improvements of the combinations claimed, and could not do so. It is admitted, as it must be, that the petitioner is free to use the machine shown in the first McFeely patent which has expired, or any other automatic lasting and tacking machine which does not embody the three improvements covered by the claims in suit.⁸ It is not free, however, to use such a machine if it embodies any one of the three combinations embraced in those claims respectively. The use of these combinations is the basis of its liability for infringement.

The decree is

Affirmed.

⁸ *Seymour v. Osborne*, 11 Wall. 516, 541, 548.

A true copy.

Test:

Clerk, Supreme Court, U. S.

SUPREME COURT OF THE UNITED STATES.

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[May 25, 1942.]

Mr. Justice BLACK, dissenting, with whom Mr. Justice DOUGLAS
and Mr. Justice MURPHY concur.

I.

In 1873, Mr. Justice Bradley, speaking for this Court in *Carlton v. Bokee*, said: "We think it proper to reiterate our disapprobation of these ingenious attempts to expand a simple invention of a distinct device into an all-embracing claim, calculated by its wide generalizations and ambiguous language to discourage further invention in the same department of industry and to cover antecedent inventions. Without deciding that a repetition of substantially the same claim in different words will vitiate a patent, we hold that where a specification by ambiguity and a needless multiplication of nebulous claims is calculated to deceive and mislead the public, the patent is void." 17 Wall. 463, 471-472. I believe that the patent of which the five claims now held valid are a part embodies every one of the vices referred to by Mr. Justice Bradley and many more besides.

I recognize that the automatic power-driven heel seat laster, the machine to which these five claims relate, is a great technological achievement. But it is not the work of a single person, nor can it be attributed to any one generation. On the contrary, it represents the sum of gradual developments wrought by the skill, perseverance, and creative genius of countless persons throughout many centuries. To this finished machine contributions have been made by those who first harnessed steam, gas, and electricity to machinery as well as those who discovered and used in combination cams, pivots, pulleys, belts, latches, triggers, springs and spring latches, brakes and brake blocks.

The exact date of the first use of machines in the manufacture of shoes is not known. But we know that in 1790, Thomas Saint secured a patent in England on a machine for the fastening of soles to uppers; and that in 1810, M. I. Brunel secured a patent in this country on a machine to perform the same function. The progress of the art for the next fifty years culminated in the stitching machine jointly patented by Blake and McKay in 1860. By 1876 this and subsequent McKay shoe machines were earning more than a half million dollars in annual patent royalties for him, and had given him the dominant position in the industry. During this period another current of invention produced the cable nailing machine which cut nails and drove them automatically. And in 1883, Jan Ernst Matzeliger invented and patented a machine which "could simultaneously and in a minute's time hold the last in place to receive the leather; move it forward step by step so that the other coaching parts might draw the leather over the heel; properly punch and grip the upper and draw it down over the last; lay the leather properly at the heel and toe; feed the nails and hold them in position for driving; and then discharge the completed shoe from the machine."¹ The foregoing inventions and numerous others patented and put into use by the close of the century completely transformed the nature of shoe manufacturing. Reviewing these and other developments, the United States Census Report of 1900 concluded that "the genius of the American inventor had provided for every detail of shoe-making, even the smallest processes being performed by mechanical devices of some kind."²

The United Shoe Machinery Company was formed in 1899. It combined in one enterprise the more important companies in the shoe machinery industry at the time, and brought under unified control the multitude of patents which those companies owned. Since that time the United Shoe Machinery Company or its parent,

¹ Dictionary of American Biography, "Matzeliger, Jan Ernst."

² Census Reports (12th Census, 1900), Vol. IX, part III, 756. On the development of the shoe machinery industry, see Gannon, *Shoe Making*, *passim*, and his article "Shoe Industry in the United States" in *Encyclopedia Americana*; Hazard, *Organization of Boot and Shoe Industry in Massachusetts before 1875*, *passim*; Kaempffert, *A Popular History of American Invention*, Vol. II, 404-434; Dictionary of American Biography, "Goodyear, Charles [jr.]", "McKay, Gordon", "Matzeliger, Jan Ernst". "Winslow, Sidney Wilmot"; *Encyclopaedia of the Social Sciences*, "Leather Industries", *e.g.*, 307-309.

the United Shoe Machinery Corporation, which is the respondent in this case, has continuously and overwhelmingly dominated the industry. The shoe machinery patents which the respondent had acquired by 1918 were recognized by this Court to be "too great in number for explanation or enumeration." *United States v. United Shoe Mach. Co.*, 247 U. S. 32, 40. In 1920, the Federal District Court for the Eastern District of Missouri found that the respondent controlled, through its system of leasing, at least 95% of all the shoe machinery used in the United States. See *United Shoe Mach. Co. v. United States*, 258 U. S. 451, 455.

The narrow field into which the patent in controversy was projected had already been so crowded by prior patents, a multitude of which were owned by the respondent, that the area left for patentable invention was very small. As the brief treatment in the Court's opinion indicates; the inventions set out in the claims now held valid, if inventions at all, are comparatively simple improvements of an automatic power-driven heel seat lasting machine.

The work of a heel seat lasting machine is to bend and flatten out the overlapping part of the shoe upper over the insole and then tack it down so that it will be ready for attaching the heel. In the performance of these operations the incompleated shoe is firmly held by a clasping device in a proper position to permit the leather to be bent and flattened by "wipers" and fastened to the insole by "tackers."

It is to the clasping device, the wipers, and the tackers that the asserted improvements relate. The operation of these parts must be carefully coordinated, and the coordination must be maintained when the machine is adjusted for different sizes of shoes. Means to accomplish the necessary coordination over a range of different sizes had been claimed in a prior patent³ which like the patent in suit was issued to Ronald F. McFeely and assigned to the respondent. The courts below found and the respondent here argues that although the machine made in accordance with the first McFeely patent "successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adopt it for commercial operation in the ordinary shoe factory." 121 F. 2d 273, 278.

³ Claim No. 167, for example, of the earlier McFeely patent (No. 1,129,881) sets out "means to adjust the back stop for shoes of different sizes including provision for indicating the correct adjustment for particular sizes."

The improvements said to cure the deficiencies in the earlier machine are covered in the five claims here held valid. Insofar as these claims set out anything not contained in the first McFeely patent, the modifications are not at all complex. The tackers and wipers, formerly connected in a manner which permitted some slight independence of movement, were now rigidly interconnected so that one could not move without the other; and a handle was substituted for a screw nut as a means of making a preliminary manual adjustment for shoes of different sizes. Changes of equal simplicity were made in the "hold-down" and the "heel band", two of the parts which clasp the shoe and hold it in place during the actual lasting process.

There is no doubt that the United Shoe Machinery Corporation, particularly since it maintains a patent department in which patent lawyer are regularly employed, could have caused these simple improvements to be patented separately and without ambiguity or prolixity. No possible justification can be offered for inextricably combining the description of the alleged improvements with a description of a complete lasting machine. Let us now turn to the patent in suit to see how far it meets the requirement of R. S. § 4888, 35 U. S. C. § 33, that a patentee "shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery."

The patent as a whole sets out 137 claims covering 16 large closely printed pages; it includes 11½ more pages of specifications and numerous drawings; it has a text of more than 25,000 words, about 14,000 of which are devoted to the claims. Remarks of Judge Learned Hand, made with respect to a patent much shorter than the one before us, are pertinent here: "Such claims violate the very purpose of any claims at all, which is to define the forbidden field. In such a waste of abstract verbiage . . . it takes the scholastic ingenuity of a St. Thomas with the patience of a yogi to decipher their meaning as they stand." *Victor Talking Mach. Co. v. Thomas A. Edison, Inc.*, 229 Fed. 999, 1001. Alexander Graham Bell's basic patent on the telephone, a pioneer invention,⁴ affords an illuminating contrast. All of Bell's claims—he found five ample—contain in the aggregate 229 words, less than many single claims of this patent; and the entire text of his patent is

⁴ See *Westinghouse v. Boyden Power Brake Co.*, 170 U. S. 537, 561-562.

about one-tenth the length of this one.⁵ The second McFeely patent, unlike Bell's, discloses no pioneer invention. On the contrary McFeely stated in his application that he was seeking to patent improvements. Yet, the features of a heel seat laster are set out so comprehensively and in such detail that a trained person would be able to build a complete machine with only his improvement patent as his primary source of information.

If the machine ~~as a~~ whole were being claimed in the second McFeely, arguments of some plausibility could perhaps be made to justify the length of the patent. For the automatic heel seat laster in its entirety is a highly complex machine combining a number of interrelated mechanisms in a manner which as the court below pointed out enables it to perform its intricate function "in the fraction of a second and too swiftly for the eye to follow." 121 F. 2d 273, 274. But we must not allow ourselves to confuse the old and the new. The impressive speed of the machine is not the result of the improvements. Like most of the other admirable qualities of the machine as a whole it was attainable before the improvements were patented and to it the improvements made no contribution.

Even if there is some conceivable basis for crediting the machine as a whole to McFeely's genius, he was not entitled to claim it in this patent. For his earlier patent, even lengthier than this one, had described and claimed as patentable invention every feature of the machine except the minor improvements to which we have referred.

One who invents improvements on a prior invention, whether his own or someone else's, may patent the improvements separately. But I do not believe that our patent system was intended to allow the indiscriminate jumbling of the new and the old which would permit the inventor of improvements to extend his domain of monopoly by perpetuating rights in old inventions beyond the 17 years period Congress has provided.

If we turn from the patent as a whole to the individual claims we find in many of them the same ground for criticism: the introduction of something new is taken as an occasion for reclaiming the old. Claim 42, one of the five claims held valid and infringed, is illustrative. In these proceedings, the respondent makes this claim the basis of his assertion that the second McFeely embodies

⁵ Telephone Cases, 126 U. S. 1, 4-14.

a patentable improvement in the hold-down mechanism, the part of the machine which holds the shoe in the appropriate vertical position during the lasting operation. But there is no clear and distinct statement in Claim 42 so limiting its scope. On the contrary, the trial court referred to this claim as "a general claim covering the machine based on the McFeely patent in suit", and the language of the claim itself purports to cover a "machine of the class described."⁶

Not only does 42 claim many old elements, but they are claimed in the same manner and with the same emphasis as the hold-down mechanism. Included among these old elements are: "clamping means to embrace one end of a last and shoe"; "end wipers positioned to operate on the edges of the upper at the said end of the shoe"; "a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with [the] clamping means and hold-down"; and "mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe". All of these old elements were to operate in exactly the same manner prescribed either in the first McFeely or other prior patents and they were to perform the same functions they had always performed.

We have held that if a claim does not contain a distinct and specific statement of what the patentee claims to be new, it is void. *Gen. Electric Co. v. Wabash Co.*, 304 U. S. 364. And we have also held void a claim which sets out an improvement of one

⁶ Claim 42 provides: "A machine of the class described having, in combination, clamping means to embrace one end of a last and shoe, end wipers positioned to operate on the edges of the upper at said end of the shoe, a hold-down mounted for vertical movement and positioned to engage the bottom of the last and shoe, a support for a last and shoe constructed and arranged for manually effected movement to engage the last and shoe with said clamping means and hold-down, power operated mechanism effective to move said support forcibly to press the last and shoe against said clamping means and hold-down and to actuate the clamping means, mechanism effective in timed relation to the clamping means to depress the hold-down and support to position the shoe bottom determinately below the plane of the wipers, mechanism operative to actuate the wipers to break down the edge of the upper over the bottom of the positioned last and shoe, the said hold-down mechanism being automatically operative subsequently determinately to raise the hold-down, the said power operated mechanism being operative substantially coincidently correspondingly to raise the said support to engage the bottom of the last and shoe with said hold-down with the shoe bottom positioned substantially in the plane of the wipers, and the end wiper mechanism being subsequently operative in timed relation to wipe over and compact the broken down edge of the upper over the bottom of the last and shoe, and manually adjustable means for determinately varying the amount of vertical movement of the hold-down."

part of an old combination but at the same time purports to cover the improvement in combination with old parts which perform no new function. *Lincoln Co. v. Stewart-Warner Corp.*, 303 U. S. 545. Claim 42, today held valid, clearly violates both of these standards.

I believe it could be conclusively shown that almost all of the 137 claims are objectionable for one or both of the same reasons as Claim 42. But the unnecessary length of this patent makes it impracticable to present a complete exposition of the vices of each separate claim in a judicial opinion. It may be possible, however, to suggest in a few brief statements the extent of the deficiencies and their cumulative tendency "to deceive and mislead the public" with respect to the scope of the patent. *Carlton v. Bokee, supra*, 472.

Of the 137 claims, 68 purport to cover in unambiguous language either "a machine of the class described" or "a lasting machine" or "a heel seat lasting mechanism" without any hint of limitation to a claimed improvement. The use of such broad language cannot be dismissed as an inconsequential matter of form, since in substance these claims embrace with varying degrees of comprehensiveness all the fundamental features of an automatic power driven heel seat laster.⁷

All but one⁸ of the remaining 79 claims are introduced by the somewhat limiting phase "in a machine of the class described." But in almost all of these the introduction is followed by a recital of old elements claimed in the same manner as they were in the

⁷ Claim 55 is illustrative. It provides: "A heel seat lasting machine having, in combination, clamping means to embrace the heel end of a shoe, wipers to operate upon the upstanding edges of the upper at the clamped end of the shoe, means to support a last and shoe in inverted position, means to raise said support to position the last and shoe for co-operation with the clamping means with the bottom of the shoe above the operating plane of the wipers, means to operate the clamping means to embrace the heel end of the positioned shoe, mechanism operative determinately to depress said last and shoe support relatively to the clamping means to upwipe the upper over the sides of the last and to position the shoe with its bottom in a plane determinately below the operating plane of the wipers with the upper edges in said operating plane, and means subsequently to operate said wipers in timed relation to the shoe support to break down the upstanding edges of the upper over the heel seat, said support operating mechanism being subsequently effective in timed relation determinately to raise said support and shoe to position the shoe bottom in the operating plane of the wipers, and said wiper operating means being subsequently effective in timed relation to operate the wipers to wipe down and compact over the heel seat the broken down edges of the upper."

⁸ Claim 39 purports to cover "an end lasting mechanism", but it, too, attempts to reclaim various old elements.

earlier McFeely⁹ and here again the aggregate effect is to reclaim a heel seat lasting machine in its entirety.

Recent studies conducted by the Temporary National Economic Committee show that the technique employed in the second McFeely patent is not unusual.¹⁰ In essence, it is an attempt to utilize minor improvements to perpetuate exclusive enjoyment of a major instrument of production which rightfully belongs to the public. Distinct separation of the new would afford guidance to those who wished to use the old when the exclusive rights to it expired. On the other hand, blurring the lines of separation places anyone who attempts to use any part of the amalgam in jeopardy of burdensome infringement suits. Where the patent owner has ample resources to bear the costs of repeated litigation, the power of the infringement suit to stifle competition is increased. And where potential competitors are weak and few, it may afford a practically complete protection for the preservation of undeserved monopoly.

⁹Claim 84 is illustrative. It provides: "In a machine of the class described, the combination with fast and shoe positioning means, of end embracing wipers, operating means for said wipers including parts movable to effect a preliminary adjustment of the wipers to the contour of the shoe while other portions of said operating means are stationary, and tackers movable inwardly over the shoe and connected to said wipers for preliminary adjustment with them."

¹⁰ *E. g.*, a "Memorandum of Policy" from the files of an industrial corporation, set out in the TNEC Hearings, contains the following guidance for the corporation's patent division:

"Continuing the Monopoly by Us or Others

"It often happens that if minor improvements are protected by patents, machines and processes licensed under the original basic patents are given a much longer earning life by the fact that the minor improvements continue the protection on the machines, and even when the basic patents expire, others are prevented from using the latest commercial form of the machine.

"Example: The . . . basic patents expired several years ago. Nobody, however, dare use the present type of . . . machine because of improvements covered by minor patents. Likewise, if the original patent protection obtained on particular machines should not be sustained by the Courts, yet a second line of defense patents covering details and improvements may become a most valuable asset.

"It has always been our ambition to obtain patents which will be related to furnace, melting and refining, feeding, delivery, forming, automatic handling, carrying, stacking and annealing. Conceivably we might lose patent domination of one or more important links, but still retain practical control of the whole chain by means of controlling the most efficient form of the other links."

TNEC Hearings, 777-778.

Cf. TNEC Monograph No. 31, 160: "A patent provides a sanction but it is about to expire—by some means or other its life must be prolonged. An improvement alone is hardly enough; its importance must be magnified until the line between invention and improvement is completely blurred. A multiplication of improvements is far better; it creates at least an appearance that an industrial art is being transformed."

The circumstances here are most favorable for the use of patent privileges as a deterrent to all competition. By its vagueness and generality, the patent in suit creates an overhanging threat to anyone who might want to produce any kind of heel seat lasting machinery. And this threat is intensified by the universal recognition of the patent owner's long established rule over the entire shoe machinery industry.

Moreover, it is entirely unrealistic to judge this patent in isolation. It is a stage of a process which the record shows began years before and is still continuing, a process by which it appears possible for the respondent to make the monopoly endless. The first McFeely patent, assigned to the Respondent, embraced the whole universe of prior development in heel seat lasting machines. About a year after it was issued the United Shoe Machinery Company became the owner of another patent on a lasting machine, Brock No. 1,188,616. The 77 claims of this patent reembody too many of the features previously covered by the first McFeely to allow enumeration here. Four years later, Pym No. 1,368,968, also on a lasting machine, was issued and assigned to the respondent. Of the 172 claims of this patent there is another multitude embodying identical features of the first McFeely. Although applied for about a year after the first McFeely, the patent in suit was not issued until 1925, four years after the Pym patent. The second McFeely appears to be only the currently used weapon; the record reveals another in the respondent's arsenal, awaiting service when this one is no longer useful.¹¹ To date the series of overlapping patents has been continuous. There is no reason to suppose that abandonment of so successful a practice is contemplated for the future.

The discouragement to future invention and the potentialities of deceiving and misleading the public which this Court condemned 70 years ago are here present in fullest measure. *Carlton v. Bokee*, *supra*. Opposed to departure from the salutary rule announced by Mr. Justice Bradley, I believe the patent before us should be declared void.

¹¹ Jorgensen No. 1,852,015, issued in 1932 and assigned to the respondent, purports to cover improvements on a machine for shaping shoe uppers "over lasts or other forms." It states that the invention "is herein illustrated as embodied in a machine for lasting the heel ends of shoes, but it is to be understood that in its more general aspects it is not limited to heel-end-lasting machines."

II.

In addition to the foregoing reasons for declaring the entire patent void, there is an independent narrower ground for reversing the decision below. The five claims here relied upon set out only an aggregation of old elements not constituting patentable invention.¹² And where as here an appellate court can determine from a mere construction and comparison of patents that an alleged new invention is in reality identical with inventions claimed in prior patents, the question of patentability should be reviewed. *Heald v. Rice*, 104 U. S. 737, 749. Cf. *Singer Company v. Cramier*, 192 U. S. 265, 275.

It was the view of both courts below that although a machine manufactured under McFeely's earlier patent had "successfully lasted shoes of specific sizes, it proved incapable of operating satisfactorily upon a range of sizes large enough to adapt it for commercial operation in the ordinary shoe factory." The five claims in suit relate to three small adjustments of the first McFeely machine intended to cure this alleged deficiency. The respondent now here asserts that the adjustments were intended to accomplish any other purpose or that in fact they did. Nor did the courts below rest their conclusions upon findings that any other purpose was accomplished. They found novelty and usefulness in the increased adaptability of the later machines over a wider range of sizes; and in the minor mechanical changes made to cure the shortcomings of the earlier machine, they found patentable invention.

But novelty and usefulness are not enough, for to be patentable, improvements "must, under the Constitution and the statute, amount to an invention or discovery." *Thompson v. Boisselier*, 114 U. S. 1, 11. And even though improvements produce "a more convenient and economical mechanism", or a "more convenient and more salable" product, or a machine of "greater precision", they are not patentable if they "sprang naturally from the expected skill of the maker's calling."¹³ As this Court said

¹² The petitioner's application for certiorari clearly raises this issue. One of the reasons we brought the case here was the opportunity it would afford to consider the petitioner's contention that the second McFeely "merely aggregates old adjusting features with an old combination . . . in conflict with the principles applied in such cases as *Grinnell v. Johnson Co.*, 247 U. S. 426."

¹³ *Grinnell Washing Mach. Co. v. Johnson Co.*, 247 U. S. 426, 434; *Specialty Manfg. Co. v. Fenton Manfg. Co.*, 174 U. S. 492, 498; *Altoona Theatres v. Tri-Ergon Corp.*, 294 U. S. 477, 486; *Am. Road Mach. Co. v. Pennock & Co.*, 164 U. S. 26, 41.

in 1875, "Perfection of workmanship, however much it may increase the convenience, extend the use, or diminish expense, is not patentable." *Reckendorfer v. Faber*, 92 U. S. 347, 356-357. Cf. *Cuno Corp. v. Automatic Devices Corp.*, 314 U. S. 84, 90-92.

A comparison of the patent in suit with patents of the past shows that the improvements here were but duplications of old elements to obtain an old result and their application to the first McFeely machine was no more than a common mechanical expedient. The objective, adapting the machine to shoes of different sizes, suggests its own means of accomplishment.

Even before 1900, automatic tacking machines and automatic wiping machines, adaptable to shoes of different sizes, had been in use commercially. In connection with the issuance of his earlier patent, McFeely represented that he had succeeded in combining tackers and wipers in a single machine and that his patent therefore set out a pioneer invention, disclosing the first machine organized for the entire process of heel seat lasting. The United Shoe Machinery Company built a machine in accordance with the patent and placed it in a factory for testing purposes. Shoes lasted on it were sold to the factory owner's regular shoe trade. McFeely had described in detail means to set the parts before the lasting operation began so that the machine would properly do its work whatever the size of the shoe.¹⁴ It is said the tests revealed that these preliminary adjustment devices were not adequate to accommodate all sizes although they did permit the machine to function satisfactorily on some.

The problem was to enable the operator in advance to enlarge or diminish the area within which the tackers, wipers, and shoe clasp devices would do their work as the shoe to be lasted might be larger or smaller. The most obvious answer was adjustments to permit appropriate positioning of the parts. Three separate hand adjustments were therefore provided to set the tacker-wiper combination, the heel clasp device, and the hold-down

¹⁴ The following excerpt from the specifications of the earlier McFeely is illustrative: "In Fig. 18 the back stop is shown as formed on a rack bar adjustable by a shaft 690 having a handle at the side of the machine with a pawl in it to engage a locking ratchet 691 having marked on it graduations indicating the proper adjustment for different sizes. The ratchet can be adjusted to position the graduations for different groups of sizes such as men's, women's or children's sizes." And the first claim sets out "means for fixing the gripper in different positions of adjustment both vertically and horizontally relatively to the last spindle for lasts of different heights and lengths."

mechanism. The adjustments were so arranged that the operator of the machine could either by use of a set screw or handle place these separate parts in appropriate positions for the particular size of shoe to be lasted. The positions set by the operator are maintained until reset for shoes of another size.

Technological knowledge and development had advanced too far by 1916 to warrant elevation of such hand adjustments to the privileged position reserved for inventions. Either in or out of the combination these adjustments performed no more than the old functions that adjustments by hand levers and set screws had always performed. Yet without these hand adjustments the problem alleged to have been revealed by operation of the first McFeely machine would not have been met. For hand adjustments were the indispensable elements of the claimed improvements. Since I believe that such adjustments should not be raised to the dignity of patentable invention, I think the five claims should be held invalid.

No argument is made that the remaining elements standing alone would have caused the machine to function satisfactorily on shoes of all sizes. Nevertheless, I shall give the reasons for my belief that there is not patentable invention in the remaining elements of the five claims.

Tacker-Wiper Connection. In the first machine, the tackers and wipers were loosely connected in a manner allowing a slight independence of movement. Demonstration of the machine indicated that more satisfactory results would be obtained if tackers and wipers maintained a fixed relationship to each other throughout all the movements of the lasting operation. Here again the problem suggested its own answer. It is difficult to imagine that any mechanic would be ignorant of the principle that if two parts are fastened together, they will move simultaneously. The change in the tacker-wiper mechanism was no more than the application of this principle. Tackers and wipers were more rigidly interconnected. Even if such an expedient could ever have been invention, it had been anticipated in the field of shoe machinery as far back as 1881, when George W. Copeland, Matthias Brock, and Joseph E. Crisp obtained Patent No. 244,714 on an automatic power-driven lasting machine which claimed a combination of wiper plates and fasteners to be moved simultaneously to the proper position for wiping and fastening the sole. I can see no evidence whatever

of an exercise of the inventive faculty in the fastening of tackers and wipers rigidly together so as to cause them to move simultaneously and maintain a fixed relationship with each other.

Heel Band and Hold-Down. The first McFeely, as had many prior patents, described a U-shaped leather heel band adapted to grip and hold the shoe while it was wiped and tacked. It is asserted that the patent in suit added attachments which permit the heel band to slide relative to its supports. The first McFeely also described a hold-down device for maintaining the shoe in appropriate vertical position for the lasting operations. It is asserted that the claim of the second McFeely which provides for the hold-down mechanism modifies the first by introducing a new "sequence of operations." The asserted modifications of both heel band and hold-down are claimed in conjunction with the hand adjustments previously discussed.

Since the beginning of shoe lasting, it has been recognized that the shoe must be held firmly in the proper position for wiping and tacking. Heel bands and hold-downs similar to those claimed here appear in the record in numerous drawings, specifications, and claims of a long series of patents prior to the one before us. The great number of patents, embodying apparently limitless variations of the same basic principles, suggests that the public had before McFeely's second patent already paid in fullest measure for heel bands and hold-downs.

Examination of only three of these patents—Plant No. 958,280 (1910), Keyes No. 1,023,854 (1912), and Brock No. 1,188,616 (1916)—is enough to show complete anticipation of the entire principle of the sliding heel band capable of forward and backward movement if not every essential mechanical detail.

• The general claim of the second McFeely which sets out the hold-down mechanism is said to provide for a "particular sequence" of operations. Insofar as the ambiguities of this claim¹⁵ permit such a deduction, there is nevertheless a failure to disclose any patentable invention. Of course, the sequence of operations in which the hold-down plays a crucial part is important. For the shoe must be maintained in such a vertical position that the successive strokes of the wipers will perform their proper function. If the shoe is too low with respect to the wipers, the leather will not be bent

¹⁵ See discussion of the invalidity of this claim (No. 42) at pp. 5-6, *supra*.

down sufficiently far; if the shoe is too high with respect to the wipers, the wipers will hit the shoe below the insole and therefore will not produce any bending of the leather at all. But in setting out a mechanism to insure the proper relationship between the level of the shoe and the level of the wipers during successive strokes of the machine, the second McFeely patent is by no means new. Claim 49 of the first McFeely patent includes a "provision for changing relatively the plane of action of the wipers and the position of the shoe between successive actuations of the wipers." And in Claim 164 of the first McFeely it appears that the hold-down mechanism was recognized as having a major role in accomplishing this purpose. For Claim 164 specifically provides "means for automatically actuating the hold down upwardly and then downwardly again between the initial advance of the wiper and a final retraction of the wiper." If the "sequence" of the second McFeely is any different, the difference cannot be seen in the provisions of the claim relied upon, nor is it explained in the record; if, as I believe, the "sequence" in both patents is the same, the second is invalid because anticipated.

In short, this record shows that the old elements composing the asserted improvements here had been described and redescribed, claimed and reclaimed as patentable inventions. The respondent has used every one of them in previous patents now expired. It should not be allowed to continue its exclusive control over their use and enjoyment.

There is perhaps another possible ground for concluding that the five claims set out patentable invention. Conceivably the three asserted improvements, although each separately is no more than a mechanical expedient or a simple adaptation of prior invention, could be accepted in combination as an exercise of the inventive faculty. The court below apparently did evaluate the improvements in combination, for it found that taken together, they resulted in a "new unitary mode of operation of the entire machine." 121 F. 2d 273, 278. But the statement is unexplained, and I cannot find support for it in the record. On the contrary, comparison of the first and second McFeely patents shows that the basic mode of operation of the entire machine in both was identical. In the earlier machine, the shoe was placed on a last at the end of a jack, firmly held in position while the wiping and tacking took place, and then released. In these fundamental respects, the mode of operation

provided for in the second McFeely patent is the same, whatever modifications McFeely may have added for the purpose of increasing adaptability to different sizes of shoes not having affected it in the slightest.

In any event, "each claim must stand or fall, as itself sufficiently defining invention, independently of the others." *Altoona Theatres v. Tri-Ergon Corp.*, 294 U. S. 477, 487. None of the five claims here in suit discloses a "new unitary mode of operation of the entire machine." Even if it were possible to deduce from the five claims taken together that McFeely had made such a disclosure, nevertheless the patent ought not to be treated as if the disclosure had actually been made in appropriate form. For the creation of a sixth claim, a combination of the other five, which McFeely himself failed to include in his patent would entail a kind of constructive patenting procedure for which there is no judicial or statutory precedent.

The courts below concluded that the five claims in suit embodied patentable invention. In reaching this conclusion, which I believe is overwhelmingly refuted by examination of the claims themselves against the background of prior developments in the art, heavy reliance was placed on two extrinsic considerations: commercial success and the presumption of validity arising from the fact of issuance of a patent by the Patent Office.

Commercial Success. When it is a close question whether the changes embodied in a later patent are a sufficient advance over earlier patents to constitute patentable invention, the measure of commercial success of the later patent has been recognized by courts as affording some aid in reaching a conclusion. But while commercial success has been said to have relevance in resolving doubts, *Smith v. Hall*, 301 U. S. 216, 233, it cannot transform an exercise of the common skill of a calling or an adaptation readily suggested by experience with prior inventions or an aggregation of familiar mechanical expedients into patentable invention. Cf. *Hildreth v. Mastoras*, 257 U. S. 27, 34. And where the patent in question reembodies a prior patent not yet expired, its commercial success does quite the reverse of establishing patentability; it establishes the seriousness of the infringement. If the reembodied prior patent has expired, or if it is owned by the owner of the later patent, commercial success is one index of success in appropriating what should have been available to the public or in extending special privileges beyond the legally permitted term.

I have already given the reasons which convince me that no patentable invention is set out in the five claims in suit. The force of none of those reasons is affected by the commercial success which the respondent has realized. After examining the record, I can find no serious doubts to be resolved. All I can deduce from the commercial success of the respondent with these machines is the magnitude of the consequences to the public who have had to pay for the respondent's extension of an undeserved monopoly through the use of an invalid patent.

Even if the issue of patentable invention were a doubtful one, the force of deductions that might normally be drawn from commercial success is greatly reduced in the circumstances of this case. For, by virtue of its dominant position in the shoe machinery industry, the United Shoe Machinery Corporation was not seriously threatened by loss of business to competitors when it withdrew the first McFeely machine from commercial use. Because there was no compelling economic incentive to hasten the commercial adaptation of the first McFeely machine, the inferences to be made from its withdrawal are extremely weak. Controlling the shoe machinery business to the extent that it did, the respondent was able to accelerate or delay the commercial exploitation of its heel seat lasting machine at its pleasure.

Moreover, the record indicates that the commercial success relied upon by the courts below would be inconclusive with respect to the second McFeely patent under any circumstances. For there is uncontroverted testimony that of the 1250 later machines in commercial use only 12 were built in accordance with the disclosures of the second McFeely patent. The remainder embody features set out in a subsequent patent, Jorgensen No. 1,852,015, or a prior patent, Hoyt No. 1,508,394, (declared invalid by the court below) or both. Since I believe that the commercial success of the respondent's machine could in no event establish the validity of the five claims in suit, I do not find it necessary to determine how much of the commercial success of the respondent's machines is to be attributed to features not set out in the second McFeely patent. Such a determination does not appear to have been made in the entire course of proceedings in this case.

Presumption of validity arising from issuance. Quoting from the opinion of this Court in *Radio Corp. v. Radio Laboratories*, 293 U. S. 1, 8, the court below stated that the present case

obliged it "to give consideration to the rule that 'one otherwise an infringer who assails the validity of a patent fair upon its face bears a heavy burden of persuasion, and fails unless his evidence has more than a dubious preponderance.' " 121 F. 2d 273, 277. For reasons I have already set out I can agree neither that the second McFeely is "a patent fair upon its face" nor that the evidence of non-patentability has no more than a "dubious preponderance." Hence, the prerequisites for establishing a presumption of validity are not here present. In the absence of a statutory prescription to the contrary, I see no reason for extending the presumption of validity arising from the mere issuance of a patent beyond the narrow compass indicated by the passage quoted from the *Radio Corporation case*.

On the other hand, there are many positive reasons for not doing so. A patent is a grant of exclusive privilege. Yet it is normally issued in a non-adversary proceeding. Indeed, it is the practice of the Patent Office to keep patent applications on file in secrecy until the time of issuance.¹⁶ The public, who will be excluded for 17 years from the field granted to the applicant, are represented only insofar as the enormous volume of business permits the examining staff of the Patent Office to watch out for the public interest.¹⁷ Moreover, the patent examiner, unlike the court in an infringement suit, does not have the benefit of the researches of opposing counsel upon the state of the prior art. Even where the Patent Office conducts interference proceedings for the purpose of determining priority of invention, a contestant is not permitted to prove that a stranger to the proceedings was the first inventor. He can oppose only his own claim of priority against that of the other party: See *Loftin v. Smith*, 126 F. 2d 514, 515.

Whatever the small weight to be given to the presumption arising from issuance of a patent, it is here overcome by the special circumstance of this case. For the patent in suit like the prior one on which it is asserted to have made improvements was issued to the same patentee and assigned to the same owner. In this kind of situation, the burden of establishing the validity of the second patent is increased, this Court having said that in this "class of cases it must distinctly appear that the invention covered by the later patent was a separate invention, distinctly dif-

¹⁶ Rule No. 15, Rules of Practice, United States Patent Office.

¹⁷ See Report of Science Advisory Board, set out in TNEC Hearings, Part 3, 1139, 1140.

ferent and independent from that covered by the first patent." *Müller v. Eagle Manufacturing Co.*, 151 U. S. 186, 198. At very best, the presumption of validity arising from the mere issuance of a patent might be permitted to tip the scale when other considerations leave the issue of patentability in equilibrium. In the present case, I believe that the emphasis of the court below on this presumption was entirely misplaced.

As I view this patent its total impact is appalling. Out of its great bulk, the respondent is able to assert only three simple improvements embraced in five claims. And on examination, it appears that these improvements fall far below the established requirements of patentable invention. Yet by its terms the patent as a whole purports to appropriate for exclusive use, not merely these improvements, but a major instrument of production in its entirety. Furthermore, this patent is one of a group which seems to have an interminable capacity for self-perpetuation. If judicial approval is to be given to patents of this kind; the public benefits which might reasonably be hoped for under the constitutional provisions and the federal statutes relating to patents can never be attained.